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Comparison of a Holistic and a Social Skills Training Program for Schizophrenics

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COMPARISON OF A HOLISTIC AND A
SOCIAL SKILLS TRAINING PROGRAM
FOR SCHIZOPHRENICS

David Lukoff

A Dissertation Submitted to the Faculty of the Graduate School
of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of
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VITA

The author, David Lukoff, is the son of Drs. Irving and Judy Lukoff. He was born June 26, 1948, in New York City.

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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	ii
VITA	iii
LIST OF TABLES	vi
LIST OF FIGURES	viii
Chapter	
I. THE PROBLEM OF RELAPSE IN SCHIZOPHRENIA	1
II. REVIEW OF THE LITERATURE ON HOLISTIC TREATMENT AND SOCIAL SKILLS TRAINING.	5
Holistic Treatment	
Status of Treatment	5
Principles of Holistic Treatment	8
Applicability of Pelletier's Principles to Schizophrenia	11
A Model Holistic Program	13
Rationale for Incorporating Exercise and Relaxation Techniques	14
Research on Relaxation	16
Research on Exercise	20
Social Skills Training	
Schizophrenia and Social Skills Deficits.	22
Social Skills Training with Schizophrenics	24
Follow-up Studies in the Community	28
Hypotheses and Objectives	30
III. METHODS	
Subjects	35
Dependent Measures	38
Procedures	
Social Skills Training	47
Holistic Stress-Management	52
Minimal Treatment	66
IV. RESULTS	
Preliminary Analyses	71
Treatment Phase	72
Overall Symptomatology	72
Anxiety	78

	Page
Depression	80
Self-concept	81
Social Skills	82
Community Phase	86
Follow-up Periods and Attrition	86
Overall Symptomatology	88
Anxiety	91
Depression	92
Self-concept	92
Social Skills	94
Community Survival	95
Medication Compliance	98
Program Evaluation	109
Objective 1: Physical Fitness	109
Objective 2: Anxiety	110
Objective 3: Self-Concept	111
Objective 4: Relaxation Training	111
Objective 5: Stress-Management Education	112
Objective 6: Stress-Reduction in the Community	112

V. DISCUSSION

Treatment Phase	114
Overall Symptomatology	114
Delusions and Hallucinations	116
Anxiety, Depression, Social Skills, Self-Concept	118
Community Phase	120
Overall Symptomatology, Anxiety, Depression, Social Skills, Self-Concept	120
Community Survival	121
Evaluation of the Holistic Program	126
Suggestions for Future Holistic Treatment Programs	130

REFERENCES	136
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LIST OF TABLES

Table	Page
1. Social Skills Training Program Schedule	53
2. Outline of Tuesday and Thursday Afternoon Stress Management Education Sessions	57 - 60
3. Outline of Tuesday Evening Holistic "Growth and Schizophrenia" Sessions	62 - 63
4. Outline of Monday Afternoon "Developing Positive Beliefs" Sessions	64 - 65
5. Outline of Thursday Evening Self-Esteem Sessions	67 - 68
6. Holistic Stress Management Program Schedule	69
7. Pre- and Posttreatment SCL-90	74 - 75
8. Pre- and Posttreatment PAS	76
9. CGI Rated by Nursing Staff	77
10. Sign Test for Subscales of Symptom Ratings	79
11. Pre- and Posttreatment Tennessee Self-Concept and SAD Scores	83
12. PAS Scores: Community Phase	89
13. SCL-90 Scores: Community Phase	90
14. Tennessee Self-Concept and SAD Scores: Community Phase	93
15a. Relapse and/or Hospitalization by Treatment Condition	96
15b. Relapse by Treatment Condition	96
15c. Hospitalization by Treatment Condition	96
16a. Relapse and/or Hospitalization by Treatment Condition by Medication Compliance	99

Table	Page
16b. Relapse and/or Hospitalization by Medication Compliance: HT and SST Combined	99
16c. Relapse and/or Hospitalization by Medication Compliance: All Treatments Combined	99
17a. Relapse by Treatment Condition by Medication Compliance	101
17b. Relapse by Medication Compliance: HT and SST Combined	101
17c. Relapse by Medication Compliance: All Treatments Combined	101
18a. Hospitalization by Treatment Condition by Medication Compliance	102
18b. Hospitalization by Medication Compliance: HT and SST Combined	102
18c. Hospitalization by Medication Compliance: All Treatments Combined	102
19a. Medication Compliance by Treatment Condition	104
19b. Relapse by Treatment Condition: Medication Refusers	104
19c. Relapse by Treatment Condition: Medication Compliers	104
20a. Posttreatment Living Situation by Treatment	106
20b. Relapse by Living Situation by Treatment Condition	106
21. Medication Compliance by Living Situation by Treatment Condition	107
22. Family Participation in Therapy and Relapse/ Hospitalization Among HT Patients	125
23. Relapse Rates Among HT Cohorts Grouped by Time of Entry into Program	131

LIST OF FIGURES

Figure	Page
1. Raw Data and Regression Lines of HT and SST TSC Total Scores	84
2. Raw Data and Regression Lines of HT and SST TSC Social Self Scores	85

CHAPTER I

THE PROBLEM OF RELAPSE IN SCHIZOPHRENIA

In the early research on mental disorders, Kraepelin (1919) separated dementia praecox from manic depression on the basis of ultimate deterioration in cases of the former. The Kraepelinian tradition persists today, and many theorists (Feighner, Guze, Woodruff, Winokur, & Munoz, 1972; Kety, 1975) still maintain that a definite diagnosis of schizophrenia can be made only if symptoms persist chronically and a deteriorating, unremitting disease course ensues.

However, more recent evidence casts doubt upon this formulation of schizophrenia as a permanent condition leading to deterioration and chronic institutionalization. Bleuler's (1974) lifetime follow-up of 208 schizophrenics found that only 10% of his patients showed the type of disease course described as typical in Kraepelin's writings. Half the patients achieved an adequate adjustment in the community, and the other 40% lived most of their lives in the community and were hospitalized only occasionally. Recent researchers have reported difficulty in even locating such nuclear schizophrenics to study (Hawk, Carpenter, & Strauss, 1975).

With the decline in the prevalence of chronic hospitalization, a new pattern has emerged as characteristic of schizophrenia. This course involves brief episodes of illness, recovery, relapse, and recovery again. Davis (1975) reviewed 24 double-blind placebo and drug maintenance

studies of schizophrenics who were released following hospitalization. He found that 40% of the patients (65% in the placebo group) relapsed during the two-year follow-up. Sixty percent weathered the two-year period without a relapse.

While the census in state mental hospitals has declined 65% since 1955, from 559,000 to 193,000 in 1974, admissions to state hospitals have increased 219% during roughly the same period, from 178,000 in 1955 to 390,000 in 1972. Sixty-four percent of the admissions were readmissions signifying a high turnover of patients through short periods of hospitalization. The problem of relapse has emerged as the most prominent issue in the maintenance treatment of schizophrenic patients today, with half of released inpatients readmitted within two years of discharge (Bassuk & Gerson, 1978).

Unfortunately, no form of psychosocial treatment has demonstrated an impact on the revolving-door, discharge-readmission pattern of relapsing schizophrenics. Despite the development of anti-psychotic drugs, milieu and behavioral therapies, and community care facilities over the past 20 years, the rate of relapse and hospitalization has not diminished (Talbot, 1974). Even the neuroleptic drugs do not prevent relapse; rather, they extend periods of remission (Hogarty, 1974). The need for a more effective treatment for the 90% of the estimated two million schizophrenics whose illness takes an episodic course is apparent.

The Clinical Research Unit, jointly sponsored by the UCLA-NPI Department of Psychiatry and Camarillo State Hospital, recently received a grant from NIMH to undertake the task of designing and evaluating two very different types of intensive therapy programs for

preventing relapse in schizophrenics. One was a holistic stress-management program and the other was a social skills training program. Both programs were new interventions for this population. No previous research has evaluated their effectiveness in improving the community tenure of schizophrenics. However, both approaches rest on a firm foundation of research with schizophrenics. The holistic program was based on findings that schizophrenia can be viewed as a psychosomatic disorder and that schizophrenics have deficits in managing stress which constitute a major cause of their symptomatic relapse. The social skills training program was based on findings that schizophrenics have deficits in independent living, social role performance, and interpersonal interaction skills which interfere with their functioning competently in the community and are another major cause of their hospitalization.

The effectiveness of the holistic and social skills treatments in reducing symptomatology and rehospitalization will be compared. However, schizophrenia produces such a wide range of symptoms and outcomes that the likelihood of multiple causation seems high. Therefore, this study should not be viewed as testing the validity of the social skills deficit versus stress hypothesis. Both lack of social skills and inability to handle stress may influence the course of schizophrenia. As treatments, social skills training and stress reduction training could produce benefits that are additive. However, research not only tests hypotheses such as which treatment is more effective, but also yields returns in exploring unknown territory. Both social skills training and holistic treatments for schizophrenic patients have not been rigorously

evaluated. The results of this study will certainly contribute to the data base which needs to be expanded considerably before final conclusions regarding the benefits of both treatments can be drawn.

CHAPTER II

REVIEW OF THE LITERATURE ON HOLISTIC TREATMENT AND SOCIAL SKILLS TRAINING

Holistic Treatment

Status of Treatment

The psychosomatic model's emphasis on the role of psychosocial stress in the development of disease has greatly influenced current thinking about the nature of illness. The basic rationale for holistic treatments derives from research conducted within the psychosomatic paradigm. Yet, as Kenneth Pelletier (1977), a leading spokesman for the holistic approach has pointed out:

It is one matter to identify the psychosocial factors in illness, but quite another to formulate effective means by which these disorders can be alleviated or prevented altogether. Despite the extensive literature linking psychological and physical factors in disease, the methods of altering these influences remain virtually unexplored. Some recent innovations in holistic medicine are promising (p. 32).

Before delving into the holistic treatment approach and the design of the holistic program for schizophrenics, this section will look at the status of treatment within the psychosomatic movement itself.

The term "psychosomatic" was first used by Heinroth in 1818 to introduce the idea of internal conflict as a basis of mental disease. However, the first influential psychosomatic movement did not start until 100 years later in Germany and Austria when the influence of emotions on bodily functions became the subject of much controversy. Franz Alexander brought the German interest in psychosomatic medicine to America where, in 1939, he initiated the first systematic

collaborative psychoanalytical research in this area. A small but active group led by Flanders Dunbar subjected large numbers of patients with organic diseases to psychodynamically oriented examinations. The journal Psychosomatic Medicine came into being in 1939, followed shortly by the American Psychosomatic Society. One of the pioneers of the field, Eric Wittkower, describes the atmosphere of the Society's early annual conventions: "One had the impression that a breakthrough in medicine had occurred. Diseases regarded previously as obscure in origin, we believed, had found an explanation and the prospects of treating them by psychotherapy appeared bright" (Wittkower, 1976, p. 6).

However, during the 1940's and 1950's, the focus turned away from clinical work to basic psychophysiological research. Internists practically abandoned the field, but psychologists increasingly entered psychosomatic research. The important breakthroughs occurred in the fields of neuroanatomy, neurophysiology, and neuroendocrinology elucidating the intricate relationships involved with visceral regulation.

The last 20 years have seen the continuation of basic psychophysiological research. Psychoanalytic concepts have lost their hold on the field. Instead, psychologists have been isolating and quantifying objectively measurable variables of personality and environmental factors. Research in the psychosomatic field is coming into a period of fruition where links are now being forged between personality (Type A and Type B), environment (life-change events), and the course of illnesses. However, psychosomatically oriented clinical

practice has not yet partaken of the feast of exciting new findings and concepts. Considering that the psychosomatic movement began 50 years ago as a reaction to "machine age medicine," it is surprising to find that it, too, has become part of the prevailing laboratory orientation. The original enthusiasm that illnesses could be treated with psychotherapy has largely disappeared. Wittkower writes of the current era, "Our assumption that psychosomatic disorders would easily be amenable to psychoanalysis and other forms of psychotherapy proved unwarranted" (Wittkower, 1976, p. 10).

A recent review of the status of psychosomatic medicine (Wittkower & Warnes, 1977) lists a variety of treatment interventions including: psychoanalysis, group psychotherapy, behavior therapy, hypnosis, autogenic therapy, biofeedback, and yoga. However, none of these techniques have emerged from the psychosomatic movement itself. Despite its theoretical and empirical vitality, the psychosomatic movement has not produced effective treatment techniques specifically for disorders fitting into the psychosomatic paradigm.

In just the past few years, a treatment approach which specifically aims to prevent stress-related illnesses has emerged from outside the psychosomatic ranks and outside the medical schools, universities, and laboratories. It has come to be called the holistic approach. The holistic movement can be characterized as ancient in terms of the origins of its treatment philosophy. Hippocrates expressed the essence of this philosophy when he stated that you cannot treat even a person's eyes without treating the whole person. But the first conference to utilize the term "holistic health" was

sponsored by the Rockefeller Foundation recently in 1975, and the Association for Holistic Health set up headquarters in San Diego only in 1976.

Yet, the term holistic has already become a staple in our media. It may even be in danger of becoming just another part of the recent trend in English toward "psychobabble." We have holistic medicine, holistic health, holistic psychology, holistic education, and holistic nutrition. There is considerable diversity of opinions concerning the definitions and parameters encompassed by the holistic movement. Some reserve the label for non-traditional healing techniques exclusively, such as acupuncture, iridology, massage, clairvoyant diagnosis, religion, and nutrition. Others incorporate the full range of healing techniques from radiation therapy and medication to visualization and exercise.

The acceptance of the holistic approach by professionals also runs the gamut. Max Parrot, a past A.M.A. President, claims that holistic treatment is assisting the individual "in all his levels of being: body, mind, and spirit" (Warren, 1978, p. 103). Some see the holistic approach as integrating traditional medical practices with techniques which emphasize the patient's responsibility for self-care and self-healing. Others view the holistic model as an alternative to the traditional medical model.

Principles of Holistic Treatment

Dennis Warren, an attorney who was a former California prosecutor for the Department of Health, has been concerned with the

holistic health movement's development from the perspective of ethics and law. He characterizes the current holistic movement as follows:

In reality, the holistic approach is in its embryonic stage. There is no accepted consensus as to the scope of holistic practices, the role of the layman and the philosophy's long-term role in medicine and society. There are no objective standards or guidelines for treatments. There is only a general philosophy of approach to health care (Warren, 1978, p. 105).

The general philosophy of approach to health care which Warren sees as the unifying force behind the holistic movement was the subject of a recent book by Kenneth Pelletier (1977). He identified three unique aspects of the holistic approach for preventing stress disorders. The first was that: "They teach people to exercise control over their autonomic or involuntary physiological functions" (p. 26). Techniques such as meditation and aerobic exercise have proved effective in enabling people to exercise control over their autonomic nervous system and reduce the physiological signs of stress. The relevant research will be summarized in the upcoming sections on relaxation and exercise. The holistic approach also includes techniques to sensitize patients to the language of their bodies so that they can monitor and recognize stress warning signs. These signs then become cues to engage in some stress-reduction activity to lower the level of physiological arousal.

The second unique aspect of the holistic approach that Pelletier (1977) indicated was that: "Each person should learn to identify the major stressors in his or her life" (p. 35). The holistic practitioner works with patients to help them sort out the psychosocial, environmental, and personal sources which generate excessive stress in their

lives. Precipitants to previous illness episodes are explored. Once this stage of awareness is reached, the task of developing and testing strategies to avoid relapse-related stressors begins. A fundamental reorientation of lifestyle may be required in order to avoid contact with known stressors which have become habitual.

The modification of lifestyle also involves developing healthy everyday living habits which increase a person's tolerance for stress. Breslow (1972) found that the habits of getting seven or eight hours of sleep, moderate drinking, no smoking, regular exercise, normal weight, regular meals, and eating breakfast daily affect the overall health and longevity of people. People with all seven of these habits are healthier than those with six. Those with six are healthier than those with five, and so on. For example, the risk of heart disease for an overweight man who smokes is five times that of a nonsmoker who carries few excess pounds. A 45-year-old man with three or less of these habits has an average life expectancy of 21 additional years. However, if he has six or seven of these habits, his life expectancy is increased to 33 additional years.

Pelletier's third unique aspect of the holistic approach was that the patient "is an active and responsible participant in the process of self-healing, he is no longer the passive victim of a disease or the passive recipient of a cure" (p. 33). Probably the most unique aspect of the holistic approach is its insistence that individuals have both the responsibility and the ability to influence the course of their illness toward health. The patient is expected to become an expert on his own illness and the factors which affect

his recovery and his relapses. In addition to techniques to manage stress, the holistic approach also focuses on the patient's expectations about his recovery. Feelings of helplessness and hopelessness interfere with the patient's ability to initiate actions to disrupt the downward spiral of psychosomatic disorders. Holistic practitioners believe that negative expectations directly affect physiological functioning:

Where the mind tends to focus, the emotions and the physiology are likely to follow. Despite the fact that the link between visualization and neurophysiological alterations remains an enigma, there is increasing evidence that subtle mental phenomena can have a profound positive or negative impact upon an individual's entire psychophysiology (Pelletier, 1977, p. 261).

Therefore, visualization, art therapy, and cognitive restructuring techniques are utilized to mobilize their motivation to combat their disease and increase their positive expectations of recovery.

Applicability of Pelletier's Principles to Schizophrenia

The importance of such stress-reduction techniques for schizophrenia should be apparent. Schizophrenic relapse has been directly linked to stressful events such as business recessions, family criticism and intrusiveness, and life-change events, many of which are outside patients' control. Therefore, if vulnerable people intend to keep their stress level beneath their threshold for schizophrenic relapse when exposed to such life-event stressors, they will need to be able to exercise immediate control over their own autonomic nervous system. They would need to engage in some activity such as exercise or relaxation which would directly lower their stress level when exposed to such stressors.

Schizophrenics are already in a heightened state of ANS arousal which renders them especially vulnerable to increases in stress level surpassing their threshold of stress tolerance. Holistic techniques seem to have long-range ANS dampening effects as well as short-term stress-reduction effects. In this sense, a schizophrenic could achieve many of the benefits of medication by deactivating his ANS through the regular practice of holistic techniques such as exercise and relaxation.

The potential benefits of holistic techniques for schizophrenics seem clear. Yet, an NIMH Technical Information computer search of the research literature did not turn up a single reference on holistic or stress management programs for schizophrenics. Some stress-reduction techniques such as exercise and meditation have been used with schizophrenics, but as isolated techniques rather than as part of an integrated stress-management program. To the best of this author's knowledge, the holistic program designed and conducted during this research project is the first program for schizophrenics based upon a stress-reduction rationale.

It can be argued that all of the many varieties of psychotherapy have the effect of helping people to live with less stress in their relationships. However, this is a by-product; psychotherapy does not explicitly train people in stress-reduction techniques. Nor are patients taught to monitor their stress level or look at all of their stress-creating behaviors. Schizophrenics are usually treated at hospitals which temporarily remove them from their stressful environment and lower other stress-arousing demands for performance, and

they are given stress-reducing major tranquilizers. But while they are recuperating, the hospital does not train the patients to manage stress in their lives.

A Model Holistic Program

Since there were no prior references on holistic programs for schizophrenics, holistic treatments for other illnesses were used as models. Holistic programs have been developed for a variety of other health problems including diabetes, cardiovascular disorders, hypertension, arthritis, asthma, and cancer. The best known and most accepted program currently in operation is the one developed by Carl Simonton and Stephanie Mathew-Simonton (1978) for cancer patients. Patients in their program have doubled their longevity compared to accepted actuarial expectations, and the percentage of patients whose cancer entirely goes into remission is also very high. These patients self-select into the program so these statistics are difficult to assess, but they demonstrate promise for their approach.

Simonton is an oncologist who became interested in the characteristics of cancer patients who recover and whose cure is labeled by the medical community as "spontaneous remissions." After extensive interviews with such patients, he found that what differentiates the remitters from the non-remitters is their belief that they influence the course of their illness in both positive and negative directions. In contrast, the non-remitters typically felt helpless and hopeless in the face of "inevitable deterioration and death."

Utilizing this information, the Simontons decided to design a

treatment program that would mobilize patients' positive beliefs concerning their recovery. The Simontons developed a visualization technique during which patients imagine their white blood cells overpowering their cancer cells and the affected tissues healing. The visualization technique mobilizes patients' expectations concerning their recovery and their motivation to actively change their lifestyles.

The second major component of the Simonton's program includes techniques to enable patients to manage their lifestyle to regulate and reduce stress. The Simontons prescribe three relaxation sessions each day and regular exercise as part of their program. They help their patients review the carcinogenic aspects of their living patterns and then modify their lifestyle to reduce their exposure to stressors and alter any interpersonal and emotional habits which generate excessive stress.

The Simontons' program has been used as the model for the design of the holistic program for schizophrenics. It has been built on the same two pillars of treatment: stress management and mobilization of positive beliefs. Many changes did need to be made in order to adapt these basic holistic foci of treatment to the nature of schizophrenia. The operationalization of the holistic stress management program is presented in detail in the Procedures section.

Rationale for Incorporating Exercise and Relaxation Techniques

The holistic stress-management program includes daily training in the stress-reduction strategies of exercise and relaxation. Both

types of approaches are seen as necessary because stress can affect the somatic and cognitive systems differently depending on the specific stressor and the individual's idiosyncratic response specificity.

A variety of recent evidence has challenged the long-held assumption of the undifferentiated nature of general arousal that was hypothesized to underlie such states as anxiety (which is a stress state). For example, psychophysiological fractionation and specificity have been found in studies by Lang (1969) and Hodgson and Rachman (1974) on fear reduction. Elliott (1964) found that intraindividual correlations between central and autonomic measures recorded across a wide variety of behavioral tasks were consistently below .16. The existence of different dimensions of anxiety has also been established psychometrically through factor-analyzing the items in commonly used anxiety questionnaires. Hamilton (1954) and Buss (1962) found that two factors, which they labeled psychic and somatic anxiety, accounted for the major portion of the variance in test performance among psychiatric patients. Davidson, Davison, and Freedland (1977) found that: "cognitive and somatic anxiety could be reliably distinguished on the basis of the patterning of cardiovascular, electrodermal, and electromyographic measures."

The somatic and cognitive dimensions represent the most basic split of the psychobiological subcomponents involved in stress and its reduction. Given these findings, Schwartz, Davidson, and Goleman (1973) investigated the hypothesis that "different procedures utilized in the reduction of anxiety differ in the degree to which they affect the cognitive versus somatic system" (p. 323). They

developed a dual component scale which separately assesses cognitive and somatic anxiety, and then applied it to the study of the differential effects of a somatic (physical exercise) and a cognitive (meditation) procedure. Forty-four regular exercisers and 33 regular meditators were tested. Meditators reported less cognitive and more somatic anxiety than exercisers. There was no main effect for group differences. Thus, the two groups did not differ in overall anxiety, but rather on the specific patterning of anxiety subsystems.

In their study, Schwartz, Davidson, and Goleman (1978) compared two groups of subjects randomly assigned to a cognitive intervention (rationale-emotive self-statements) and somatic intervention (progressive muscle relaxation). They found significant differences on measures of somatic activation (heart rate and EMG) and cognitive activation (skin resistance) when the subjects were exposed to slides of anxiety eliciting situations.

These findings confirm that therapeutic interventions result in significant changes primarily in the biobehavioral systems which they engage. The data specifically suggest that particular therapeutic regimes are maximally effective in attenuating different types of anxiety (p. 434).

Since individuals vary in the biobehavioral systems in which they experience anxiety, and the response aroused in an individual across different situations may vary, a thorough approach to stress management should include training in techniques which affect both the somatic and cognitive systems.

Research on Relaxation

Many forms of relaxation have demonstrated their utility in

reducing stress. Progressive relaxation (Shoemaker & Tasto, 1974), yoga (Patel, 1975), and autogenic training (Klumbies & Eberhardt, 1966) have been used successfully in the treatment of hypertension. It seems any relaxation activity practiced regularly has stress-reduction benefits.

However, one prime determinant of the clinical utility of a technique is its compliance record. A technique which demonstrates its effectiveness in the laboratory but does not gain compliance among patients fails to be an effective clinical tool. Meditation has shown comparatively high rates of compliance. In a 3-year study conducted at the Hartford Institute of Living (Glueck & Stroebel, 1975) comparing biofeedback, progressive muscle relaxation, and meditation, most patients in the biofeedback and progressive relaxation groups dropped out. Almost all the patients assigned to the meditation group continued to meditate. In a follow-up survey, 68% of the patients reported that they were still meditating and obtaining good results from the practice.

During the in-hospital phase of this study, it was found that the meditators improved significantly more than all the other hospital patients discharged that year and more than a group of matched controls on global ratings of improvement, amount of psychotropic and sedative medication used, and level of pathology on the MMPI. This study shows that meditation can be used effectively with some schizophrenic patients.

Of all the relaxation techniques, meditation has been researched the most extensively with over 400 published studies. Meditation has

consistently been shown to reduce the physiological signs of arousal which accompany stress. Its physiological effects constitute a configuration opposite to that of the hyperarousal reaction identified by Cannon (1932) as the "flight or fight" response. Meditation reduces heart rate, decreases oxygen consumption, decreases blood pressure, increases skin resistance, increases regularity and amplitude of alpha activity. Meditation has been described as a hypometabolic state which can be self-induced (Allison, 1970; Benson, Beary, & Carol, 1974; Wallace, 1970; Wallace, Benson, & Wilson, 1971).

Goleman and Schwartz (1976) evaluated the effects of meditation on reactivity to a complex emotional stressor. Thirty meditators and 30 non-meditators were exposed to a standard laboratory stressor consisting of a short film depicting a series of bloody accidents among workers in a wood-working shop. One-half the subjects in each group were instructed to relax for 20 minutes prior to viewing the film. The other half were told to meditate. The novice meditators were taught to meditate right in the lab to control for the usual confounding factor in meditation research of subject self-selection. After the film, the meditators showed faster recovery. Their signs of bodily arousal as assessed by phasic skin conductance and heart rate fell more quickly than those of the non-meditators. Even the novices, who meditated for the first time that day in the lab, recovered more quickly than the non-meditators who relaxed.

Meditation has been successful in reducing self-reports of anxiety in several pretest-posttest questionnaire studies utilizing the

Speilberg Trait/State Anxiety Scale (Davidson, Goleman, & Schwartz, 1976; Goleman & Schwartz, 1976), the IPAT Anxiety Questionnaire (Ferguson & Cowan, 1977), and the Bendig Anxiety Scale (Hjelle, 1974).

There is some evidence that the regular practice of meditation can enable a person to withstand more life changes with less illness. Lahr (1976) compared beginning and experienced meditators with non-meditators and found the meditators had experienced more life changes than non-meditators but had less illness. Self-selection of meditators is a confounding factor in this study, however.

The most conclusive evidence for the long-term benefits of meditation with a stress-related illness comes from the research on its use with hypertension. Definable pathology is found in less than 10% of reported cases (Frumkin, Nathan, Prout, & Cohen, 1978). Most investigators view hypertension as a psychosomatic disorder involving cognitively-mediated, prolonged sympathetic arousal. Benson conducted four studies on the use of meditation in the treatment of hypertension (Beary & Benson, 1974; Benson, Beary, & Carol, 1974; Benson, Rosner, Marzetta, & Klemchuk, 1974a, 1974b). Both systolic and diastolic pressures declined significantly in meditating hypertensive subjects over follow-up periods ranging from 9-63 weeks. These reduced blood pressures occurred during nonmeditation times of the day. Although these studies did not have a control group, there were relatively long baseline periods of stable blood pressure measures before meditation training, and the blood pressure of nine subjects who stopped meditating returned to premeditation levels.

Research on Exercise

Whereas the best documented research on the clinical usefulness of meditation for the treatment of a stress-related illness has been conducted on hypertension, the research on exercise has focused on cardiovascular disorders. The cardiovascular system is intrinsically involved in any stress response. It is the first system to be mobilized by the CNS in response to a stressor. The cardiovascular system supplies the musculoskeletal system with the metabolic requirements for motoric action in the "flight or fight" response. However, few modern-day stressors can be resolved through physical action involving fighting or fleeing. In an article entitled "Aerobic exercise as a therapeutic modality in the relief of stress," Eliot, Forker, and Robertson (1976) state:

Neurogenically mediated changes in blood chemistry and myocardial metabolism are thus prolonged, and the cardiovascular system is maintained in extended, unresolved, and potentially harmful periods of readiness. In the absence of augmented vasodilation subsequent to muscular exercise, the state of cardiovascular preparedness is not discharged. Thus the heart and vascular system are subjected to work loads far in excess of that expected during aerobic exercise (p. 233).

Many of the physiological effects produced by exercise conditioning are the opposite of the changes that occur during stress. As the result of long-term exercise, blood catecholamines decrease, cholesterol decreases, blood pressure decreases, heart rate reduces (Eliot, Forker, & Robertson, 1976; Ismail & Young, 1977). Exercise also has quieting effects on the sympathetic nervous system which mediates the stress response: "Exercise conditioning inhibits sympathetic tone and excitability...The effect is an exercise bradycardia mediated through the autonomic nervous system" (Eliot, Forker,

& Robertson, 1976, p. 237).

Many epidemiological studies have shown a strong relationship between physical fitness and cardiovascular disorders. However, epidemiological studies are always complicated by self-selection effects. Birrell and Roscoe (1978) tested the effects of aerobic exercise on stress reactivity and the development of cardiovascular disorders in rats. With the regulation possible in a laboratory experiment, they were able to control for this complicating factor as well as weight differences due to exercise. They found that aerobic conditioning provided protection against cardiovascular damage due to exposure to extreme stressors.

Hospitalized patients have been found to possess low levels of physical fitness and would therefore seem more vulnerable to the effects of stressors (Morgan, 1969). The physiological pathway between the stress responses and schizophrenic symptoms has yet to be delineated. But a technique which provides protection against the effects of stress on one physiological system most likely has prosthetic benefits for other systems which are also affected by stress.

In addition to its physiological benefits, exercise is also an activity. Gal and Lazarus (1975) have reviewed the role of activity in anticipating and confronting real life stressors, such as combat, and laboratory stressors, such as unpredictable electric shock:

It seems quite evident that activity during stressful periods plays a significant role in regulating emotional states. We are inclined to interpret activity as being a principal factor in coping with stress...A person may alter his/her psychological and physiological reactions in a given situation simply by taking action (p. 18).

While the authors did not evaluate aerobic exercise explicitly, their definition of activity is "overt, motoric action" taken by the individual while he is anticipating or confronting a stressor. They compared threat-related and non-threat-related activity, and found "many cases where activity is in no way related to the impending harm yet is still anxiety reducing" (p. 15). They discuss two possible explanations: (1) that activity diverts the person's attention from the stress cues; (2) that activity allows for dissipation of bodily mobilization or arousal. In view of the previously cited research on its physiological effects, aerobic exercise would qualify as an effective activity on both accounts.

Research on the usefulness of exercise for the treatment of psychiatric illnesses is just beginning. John Griest (1978) at the University of Wisconsin used 10 weeks of running therapy as the treatment for eight depressed outpatients. It was as successful in relieving symptoms as traditional psychotherapy in the randomly assigned group. Thaddeus Kostrubala (1976) has reported successful cases using running therapy with depressed and schizophrenic patients. Thus, the limited research in this area provides some evidence that exercise would be a valuable therapeutic modality in the treatment of schizophrenia.

Social Skills Training

Schizophrenia and Social Skills Deficits

In the past 10 years, social skills training has become one of the most accepted and prevalent interventions for schizophrenia. A

major article in Schizophrenia Bulletin (Wallace, Nelson, Liberman, Aitchison, Lukoff, Elder, & Ferris, in press) reviews over 70 studies in this area. NIMH and other agencies are actively funding research projects on social skills training including the one at the UCLA-NPI Clinical Research Unit discussed in this thesis. Deficiencies in the social functioning of schizophrenics has been a finding in a number of studies (Phillips & Zigler, 1964; Zigler & Phillips, 1962). For example, Zigler and his colleagues have reported correlations between social inadequacy and schizophrenia in several studies ranging over the past 18 years. Their major finding can be summarized as indicating that the better a person's level of social competence prior to being hospitalized, the more likely his/her ability to succeed in terms of post-hospital adjustment. Phillips and Zigler (1964) examined the case histories of 25 first-admission patients admitted to Worcester State Hospital between 1945 and 1954. A social competence score was constructed in terms of the individual's age, intelligence, education, occupation, employment history, and marital status. Symptoms indicating "avoidance of others," e.g., withdrawal, suspicion, depersonalization, were assessed from descriptions of the patient's behavior by a psychiatrist utilizing case records. The authors reported that:

An avoidance of others role expresses an inadequate social response. This role is characterized by a state of withdrawal and isolation in which the person is neither concerned with societal demands nor feels compelled to cope with such demands. It would appear to be this withdrawal from society and turning inward which makes for poorer prognosis (p. 388).

Strauss and Carpenter (1974) also investigated the relationship

between premorbid frequency of social relations and outcome by using a prospective design with 84 schizophrenics. During their hospitalization, they administered a 14-item prognostic scale, and then they conducted a follow-up five years later. They found that: "...duration of hospitalization, poor social relations, and unemployment are the variables with a highly significant impact on outcome prediction" (p. 41). The actual correlation between poor social relations, measured in terms of frequency of social contacts, and poor outcome was .36.

Cohan and Sokolovsky (1978) compared the social networks of schizophrenic and nonpsychotic residents in a single-room occupancy hotel in New York City, a typical community placement for released psychiatric patients. Smaller networks were reported for the ex-patients than for the nonpsychotic residents. The study also found an inverse relationship between network size and the likelihood of return to the hospital. Schizophrenic individuals seem to have more limited networks of social connections than nonpsychotic individuals, and the more limited, the worse is their prognosis for tenure in the community.

These studies suggest that if schizophrenics could have their social skills buttressed by an effective therapy procedure, they might be able to make a better adjustment to community living and thereby forestall rehospitalizations.

Social Skills Training with Schizophrenics

The hallmark of the behavioral approach is the emphasis on a one-to-one relationship between diagnosis and treatment. Social skills

training conducted from the behavioral perspective utilizes direct rehearsal of the social skills assessed and found to be deficient. Although some interventions have been focused on discrete behaviors such as eye contact and positive statements (Lieberman, Teigen, Patterson, & Baker, 1973), the clinical outcome of such a narrow focus is quite limited. Research in the field has generally shifted toward evaluating the effects of comprehensive treatment packages aimed at improving many behavioral dimensions of the patient's social functioning. These programs employ an amalgam of techniques including role playing, modeling, prompting, instructions, feedback, reinforcement, self-monitoring, self-instructions, and homework assignments.

Goldsmith and McFall (1975) developed and evaluated one such social skills training program for 36 male patients on the psychiatric ward at Chicago's West Side V.A. Hospital. They defined their approach as follows:

Social skill training is a general therapy approach aimed at increasing performance competence in critical life situations. In contrast to therapies aimed primarily at the elimination of maladaptive behaviors, skill training emphasizes the positive, educational aspects of treatment. It assumes that each individual always does the best he can, given his physical limitations and unique learning history, to respond as effectively as possible in every situation. Thus, when an individual's "best effort" behavior is judged to be maladaptive, this indicates the presence of a situation-specific skill deficit in that individual's repertoire (Mager & Pipe, 1970). Whatever the origins of this deficit (e.g., lack of experience, faulty learning, biological dysfunction) it often may be overcome or partially compensated for through appropriate training in more skillful response alternatives. Presumably, once these new skills have been acquired and reinforced, they will displace any competing, less reinforcing maladaptive behaviors (p. 51).

They developed 55 problematic situations from interviews and questionnaires conducted with outpatients. Then eight staff members

at the Illinois State Psychiatric Institute were presented with these situations and asked to roleplay them, thereby generating response options for each item. Additional staff members evaluated the competence of these response alternatives. Patients were given the list of situations to determine which situations were problematic for them, and 25 were selected for training. Thirty-six male inpatients were randomly divided into three groups. One group was given three one-hour training sessions covering the selected situations, such as initiating and terminating conversations, dealing with rejection, being assertive, and being self-disclosing. They heard effective responses to each situation and were coached about the principles of effective behavior in that situation. Then the patient roleplayed the situation, and his response was played back. He evaluated his response and then the experimenter provided corrective feedback. The rehearsal was repeated until both the subject and experimenter agreed that it met the criteria for effective behavior two consecutive times.

Patients in the pseudotherapy control condition also participated in three one-hour sessions where they listened to the tapes of the problem situations. However, the subject was encouraged to explore his feelings about it and seek insight into the reasons for his feelings. No specific behavioral solutions were suggested or rehearsed.

A third group of 12 patients only received the pretest and post-test. All of the 36 patients were administered the Interpersonal Behavior Roleplaying Test, a simulated real life test using a confederate,

and a Global Self-Perception Questionnaire. The social skills training group reported significantly greater ($p < .05$) improvement in self-ratings of difficulty in meeting strangers and feelings of self-worth. The patient's roleplaying performance was taped and blindly rated by two raters. Comparisons indicated that the social skills training group improved more than either of the two control groups. In the simulated real life behavior test, the confederate (rating blindly) perceived the social skills patients as more skillful than the control patients ($p < .05$).

Herson, Bellack, Eisler, and colleagues have conducted a series of 12 studies on social skills training with psychiatric patients. All have shown that social skills training improves the behaviors targeted during training: number of seconds of eye contact, speech duration, assertive requests for behavior change, appropriate affect, speech initiations, latency of response, loudness (Bellack, Herson, & Turner, 1976; Edelstein & Eisler, 1977; Eisler, Blanchard, Fitts, & Williams, 1978; Eisler, Herson, & Miller, 1973; Herson & Bellack, 1976).

Finch and Wallace (1977) matched 16 patients on the basis of age, length of hospitalization, and pre-treatment level of social skills. Subjects were randomly assigned within matched pairs to either a social skills training group or a milieu therapy group. Social skills training consisted of 12 one-hour role playing sessions focusing on eye contact, speech latency, content, affect, loudness, and fluency. Patients were also given assignments to complete outside the sessions.

At the end of 12 weeks, both groups were reassessed on role-played scenes and the Wolpe-Lazarus Assertive Questionnaire, a self-report measure. The social skills training group significantly exceeded the milieu group on all behavioral measures: loudness, fluency, affect, latency, content, and eye contact. Self-reported assertiveness also improved more for the social skills training group.

Over 15 studies have been reported on the effectiveness of social skills packages with psychiatric patients (Wallace et al., in press). These studies have clearly demonstrated that roleplaying and other behavioral techniques can alter patients' behavioral performance during subsequent roleplays and even in simulated real life situations with confederates on such variables as eye contact, fluency, speech duration, appropriate affect, loudness, and emission of assertive responses. However, no studies to date have assessed the impact of social skills training on relapse or length of community tenure.

Follow-Up Studies in the Community

Although none of the hospital-based social skills or holistic studies included follow-up assessment of the patients' posttreatment community survival and level of symptomatology, there are several community-based treatment studies which have examined patients' functioning in the community following treatment. Mosher and Menn (1978) treated young, first-break schizophrenics in a residential setting based on R. D. Laing's approach and staffed primarily by paraprofessionals. They attempted to guide patients through their psychoses without medication by providing an unstructured and permissive milieu.

The comparison treatment was provided by a local community mental health program. Patients were not randomly assigned, but a matching procedure was used which, unfortunately, did not include psychosocial functioning as a matching pretreatment variable. Polak and Kirby (1976) randomly admitted patients to inpatient hospital treatment or to "crisis homes" operated by private families who provided shelter and support. Mental health workers were available to the operators for consultation. Rutman (1971) treated a randomly assigned group of new admissions in a half-way house with a token economy while control patients were admitted to an inpatient hospital.

All three studies reported that the experimental patients spent significantly fewer days in the hospital and were admitted to the hospital less often during the active treatment phase. However, there were no significant differences in level of symptomatology between the experimental patients and those receiving more conventional psychiatric care. Most importantly, all three studies found that treatment differences in hospitalization rates disappeared during the follow-up periods ranging from 6 to 24 months.

In the most intensive treatment study, which also included the most extensive battery of assessments, Test and Stein (1978) randomly assigned patients seeking in-hospital admission to a community treatment or to a standard hospital treatment condition. In the community treatment program, patients lived independently in apartments or rooms and received intensive in vivo training in social skills, community living skills, and employment hunting by an interdisciplinary mental health staff. In addition, the staff maintained 24-hour avail-

ability to the patients and to the community to provide support during time of crisis.

During the 14 months of treatment, patients involved in the community program showed significantly less unemployment, higher income, more independent living, and better social adjustment than the hospital-treated controls. They were also significantly less symptomatic and spent significantly fewer days in the hospital than controls. However, as in the other programs, Test and Stein (1978) found that during a 14-month posttreatment period, the differences in favor of the community treatment group disappeared. Thus, all the available studies indicate that improvements in symptomatic status and community functioning are not maintained following the termination of treatment.

Hypotheses and Objectives

Hypotheses concerning symptoms and functioning in six areas were evaluated in this study. Although the hypotheses for the treatment phase and the follow-up community phase are the same, the results will be considered separately. Thus, the effects of the shift from the hospital to the community environment, and from daily stress-reduction or social skills sessions to an unstructured schedule can be isolated. Three measures assessed symptoms from the patient's perspective, the nursing staff's perspective, and an interviewer's perspective. Since both treatments addressed known deficits of schizophrenics, although in different areas, there is no a priori reason to expect that either program would be more successful than the other in reducing overall symptomatology.

Hypothesis 1: There will be no difference between the social skills and holistic treatments on the summary indices of the symptom scales during the treatment phase.

Hypothesis 6: There will be no difference between the social skills and holistic treatments on the summary indices of the symptom scales during the community phase.

Since each treatment focused on a different area of functioning, several hypotheses predict significant differences on outcome measures specifically related to their separate foci. The holistic program incorporated training in stress-reduction techniques to reduce anxiety while the social skills program did not provide any training related to anxiety management. Therefore, the holistic patients' scores are expected to be lower than the social skills patients' scores.

Hypothesis 2: The holistic patients will score significantly lower than the social skills patients on the interviewer-rated and self-rated measures of anxiety during the treatment phase.

Hypothesis 7: The holistic patients will score significantly lower than the social skills patients on the interviewer-rated and self-rated measures of anxiety during the community phase.

Some recent research by John Griest (1978) has shown that running is an effective treatment for depression. Since running is a component of the holistic patients' treatment, they are expected to score lower on the measures of depression.

Hypothesis 3: The holistic patients will score significantly lower than the social skills patients on the interviewer-rated and self-rated measures of depression during the treatment phase.

Hypothesis 8: The holistic patients will score significantly lower than the social skills patients on the interviewer-rated and self-rated measures of depression during the community phase.

The holistic program included a weekly group designed to improve the patient's self-concept. The social skills program did not attempt to intervene in this area of functioning. Therefore, the holistic patients are expected to score higher on the measure of self-concept.

Hypothesis 4: The holistic patients will score significantly higher than the social skills patients on the measure of self-concept during the treatment phase.

Hypothesis 9: The holistic patients will score significantly higher than the social skills patients on the measure of self-concept during the community phase.

The social skills program was designed to improve the patients' competence and bolster their confidence in their ability to engage in interpersonal interactions. The holistic program did not have a specific component dealing with social competence. Therefore, the social skills patients are expected to do better on the measures related to social competence.

Hypothesis 5: The social skills patients will perform better than the holistic patients on the measures of social competence during the treatment phase.

Hypothesis 10: The social skills patients will perform better than the holistic patients on the measures of social competence during the community phase.

A critical issue is the impact these treatments had on the

patients' ability to survive in the community. Data was collected for all patients on incidents of hospitalization and symptomatic relapse during the first nine months after discharge. Based on the available research, there is no reason to expect that one treatment will be more effective than the other in preventing relapse or rehospitalization.

Hypothesis 11: There will be no difference between the holistic and social skills patients in rate of relapse or rehospitalization during the nine-month follow-up period.

A quasi-experimental control group was created from patients who participated in a different study (see Methods chapter). They received the standard Camarillo State Hospital treatment consisting of 2-8 weeks of chemotherapy and group therapy. Both the holistic and social skills patients are expected to have a lower rate of relapse and rehospitalization than the control patients.

Hypothesis 12: The holistic and social skills patients will have a lower rate of relapse and rehospitalization than the control patients during the nine-month follow-up period.

In addition to hypotheses testing, this study will evaluate the effectiveness of the holistic program in achieving its own objectives in the areas of physical fitness, anxiety, self-concept, relaxation training, stress-management education, and utilization of stress-reduction techniques in the community. The success of the holistic program in achieving these objectives will be evaluated without reference to the social skills program. The key issue in the program evaluation section is not the clinical effectiveness of the holistic treatment. The hypothesis testing addresses that question. The main concern is

whether the various training procedures (e.g., jogging, meditation) were effectively administered. The lack of previous research on holistic techniques with schizophrenics makes this a particularly important concern.

Objective 1: The holistic patients will show improvement in their level of physical fitness during the treatment phase.

Objective 2: The holistic patients will reduce their scores on the measures of anxiety during the treatment phase.

Objective 3: The holistic patients will improve their scores on the measures of self-concept during the treatment phase.

Objective 4: The holistic patients will show an increased ability to lower their blood pressure during the treatment phase.

Objective 5: The holistic patients will comprehend the material from the stress-management education sessions as assessed by the quizzes given after each session.

Objective 6: The holistic patients will continue to practice stress-reduction techniques once discharged into the community.

CHAPTER III

METHODS

Subjects

Between April 1978 and July 1979, 28 male schizophrenic patients were selected to participate in the treatment study. A psychiatrist and psychologist were responsible for screening and selecting the schizophrenic patients for the research project. Patients for the study were drawn from three hospitals: Camarillo State Hospital, Ventura Mental Health Clinic, and UCLA Neuropsychiatric Institute. The majority of patients came from Camarillo State Hospital which has between 80 - 100 admissions per week to its eight acute adult admission units. All units were screened for potential candidates, usually on a twice weekly basis. New patients whose charts indicated that they met the following criteria were approached for an interview:

Inclusion (Must meet all)

1. Present State Examination positive for schizophrenia within the last month
2. Male
3. Caucasian
4. Between ages of 17 - 50
5. Symptomatic or behavioral exacerbation within six months of current admission
6. Inpatient in a psychiatric facility at time of screening
7. Onset of illness before age 40

Exclusion (Any one sufficient for disqualification)

1. Continuous, severe, psychotic symptoms for one year or longer at time of screening
2. Hospitalized more than one year consecutively in past five years
3. Organic syndrome which would interfere with cognitive processing

If they were willing to be interviewed and sign the Informed Consent agreement, the Present State Examination diagnostic interview was administered. If a patient was found to be positive for a diagnosis of schizophrenia, permission was requested from the patient to contact his relatives to gather supplementary data. If the relatives were willing to participate in family therapy, the patient was given a tour of the Research Unit. Participation in the treatment research program was voluntary. The Informed Consent Form for participating in the research project was explained and the patient was offered a place in the program.

Cohorts of six patients were selected every 14 weeks starting from April 1978. The fifth and final cohort finished treatment in July 1979. Despite the inducement of three dollars per day for participation, two patients dropped out of the first group, leaving only four in the first treatment group. All 24 patients from the subsequent four cohorts completed the program, generating a total sample of 28. Patients were randomly assigned to the holistic and social skills conditions. The first program had two patients participating in each treatment, and the following four programs had three in each treatment.

To provide a basis for comparison of the effects of the holistic (HT) and social skills (SST) groups, a "nonequivalent control group" (Campbell & Stanley, 1963) was constructed from patients who received the standard treatment given at Camarillo State Hospital. The 23 patients in this minimal treatment (MT) group were not randomly assigned to this condition, but were drawn from the same general subject pool as the treatment patients. Like the treatment subjects, they had participated in an affiliated study on family factors in relapse and rehospitalization. The primary difference between patients in the MT group and those in the SST/HT groups is the time at which they happened to enter the hospital. The treatment program ran in 13-14 week cycles: 10 weeks of treatment and 3-4 weeks of recruiting new subjects. In general, male patients who participated in the Family Factors study and who entered the hospital 1-4 weeks before the beginning of a SST/HT program were offered the treatment program. Family Factors study patients who entered the hospital at other times did not have the option of participating in the treatment program. Unfortunately, there were exceptions to this selection procedure. Some patients who were very motivated to participate in an intensive treatment program, or whose parents were anxious for them to receive treatment, were given the opportunity to participate in the SST/HT program even though their admission occurred outside the usual time period for selection. In addition, some patients who were given the option of participating in the treatment program chose not to. Thus, there was a self-selection factor operating in the creation of the treatment and control conditions.

The Family Factors study included schizophrenic Caucasian males and females from 18-50 years of age. However, only males 18-35 years old were selected for the MT group because that paralleled the sex and age range of the SST/HT groups.

Strauss and Carpenter (1974) found that a patient's past hospitalization history was the best overall predictor of outcome in several areas including future hospitalizations, social functioning, and vocational functioning. The HT, SST, and MT groups were closely matched in this regard. The median number of hospitalizations for the SST group was four. For the HT group it was five, and for the MT group, three. The MT median is probably underestimated because the psychiatric histories taken on these patients were not as intensive. Hence, some previous hospitalizations were probably not detected. Nevertheless, it seems that the three groups were equivalent in their incidence of past hospitalization.

The MT patients were not given the same battery of pre-post tests as the HT and SST patients. The only measures taken on the MT patients were their rates of relapse and rehospitalization during the nine months following their discharge. Thus, they could not serve as a control group for the treatment phase results. The MT data could only be used to test Hypothesis 12 which compared the relative effectiveness of the experimental and control groups in reducing the rate of relapse and rehospitalization.

Dependent Measures

Present State Exam (PSE). The PSE, a mental status interview

schedule now in its ninth edition, was used to obtain a reliable diagnosis. Professor John Wing (1967) at the Institute of Psychiatry, London University, developed the PSE to reliably rate as present or absent a number of symptoms thought to be characteristic of schizophrenia. It has been used in several major research programs including the World Health Organization International Pilot Study of Schizophrenia and the UK-US Diagnostic Project. The upcoming DSM III has been heavily influenced by the basic design and procedures of the PSE.

Luria and McHugh (1974) found an interrater reliability of .90 between four raters for the phenomenological symptoms. However, the four symptoms based on observed behavior had lower reliabilities such as .44 for catatonic movements. The reliability of diagnosis is also very high. Wing (1967) reported interrater reliability of .84 for assignment into 11 different diagnostic groups. When utilized solely to discriminate schizophrenics from non-schizophrenics, the reliability rose to over .90.

Both PSE interviewers on the research project were trained by Ian Falloon, M.D., who learned the technique while at the Maudsley Hospital in London. He conducted a week-long workshop with the interviewers prior to the beginning of the study. The interviewers then conducted training interviews which they taped. The tapes were re-played later with Dr. Falloon giving feedback on the interviewer's ability to elicit symptoms and rate symptoms accurately. Although no specific criteria were adopted to certify the interviewers, the reliability ratings which were conducted monthly during the first four months of the study averaged above .80 between Dr. Falloon and the psychiatrist

and psychologist who were responsible for conducting the diagnostic interviews.

Psychiatric Assessment Scale (PAS). The PAS was developed specifically to facilitate the assessment and measurement of clinical therapeutic progress. Krawiecka, Goldberg, and Vaughan (1977) aimed "to produce a short set of rating scales which would provide a reliable clinical assessment of chronic psychotic patients and which would be sensitive to changes in their condition" (p. 299). The eight scales include: Depression, Anxiety, Delusions, Hallucinations, Incoherence and Irrelevance of Speech, Poverty of Speech, Flattened or Incongruous Affect, and Psychomotor Retardation. All are rated on a 5-point scale from absent (0) to severe (4). Each scale has explicit criteria for determining the rating.

For a reliability study, the authors developed a manual and videotape to train five psychiatrists. On 10 videotapes of interviews with patients, Kendall's Coefficient of Concordance, W , ranged from .58 to .87 on the different symptoms. The Friedman's Two-Way Analysis of Variance by ranks showed no significant differences between the psychiatrists in their mean severity ratings with the exception of the Flattened or Incongruous Affect scale. Thus, interrater reliability was found to exist at an acceptable level.

The authors also reported unpublished studies where the PAS agreed with other ratings (unspecified) of therapeutic progress in a drug trial study. It was also used to monitor progress in a study on rehabilitation using a token economy. However, these results have not been published either.

Self-report Symptom Inventory (SCL-90). The SCL-90 is a self-report instrument consisting of 90 items. Each item is rated by the patient on a 5-point scale of distress ranging from "not-at-all" to "extremely." Nine underlying symptom dimensions and three summary indices are produced: Somatization, Obsessive-compulsive, Interpersonal sensitivity, Depression, Anxiety, Anger-hostility, Phobic anxiety, Paranoid ideation, Psychoticism, Positive symptom total, General symptom index, and Positive symptom distress index. The SCL-90 is an expanded version of the 58-item Hopkins Symptom Checklist (Lipman, Cole, Park, & Rickels, 1965). The first five symptom dimensions in the list above are common to both the SCL-90 and Hopkins Checklist, and have been validated in several studies discussed below. Validation studies on the other four dimensions are still in progress.

The symptom dimensions were determined through both clinical rational clustering and empirical factor analysis. Experienced clinicians were asked to assign the symptom items to homogenous clinical clusters based on their clinical experience. Symptoms that were assigned with a high level of consistency were retained and provided the cluster definitions. In the factor analytic studies, a sample of 1,115 anxious neurotic patients were tested. Both orthogonal and oblique rotations were in close agreement in defining the five primary symptom dimensions. Another study cited in Derogatis, Lipman, Rickels, Uhlenhuth, and Cove (1974) aimed at assessing the factorial invariance of the symptom dimensions across doctors' versus patients' ratings, and within patients across socioeconomic classes. Results indicated

high levels of invariance both between doctors and patients and among patients of varying socioeconomic levels.

Internal consistency of the first five symptom dimensions was measured on samples of anxious and depressed outpatients as well as in a general health survey conducted in Oakland, California. Alpha coefficients ranged from .84 to .87. Test-retest reliability over one week ranged from .75 to .84 on the five scales.

The question of validity has been addressed in many outpatient studies using the Hopkins Checklist, and it has been found to be sensitive to the effects of psychotropic drugs. Anxious neurotic outpatients have shown change on the symptom dimensions when treated with anti-anxiety medication. Studies with hospitalized depressed patients have also shown the Hopkins Checklist to be sensitive to improvement when these patients were given antidepressants. Comparisons of schizophrenic patients treated with phenothiazines and with placebos revealed significant differences on a number of the symptom dimensions. These studies indicate that at least the first five dimensions of the SCL-90 have practical value as sensitive indicators of change in symptomatic status, and contribute to the scale's criterion-related validity.

Clinical Global Impressions (CGI). The CGI consists of three global scales, two of which were utilized in this study: Severity of illness and Global improvement. Both were rated by the nursing staff on a 7-point scale. The severity rating ranges from "normal, not at all ill" (1) to "among the most extremely ill patients" (7) and is based on the patient's condition during the previous week. The Global improvement scale ranges from "very much improved" (1) to "very much

worse" (7) with a rating of 4 equivalent to "no change." This rating is based on a comparison between the patient's current state and his/her condition on admission.

The CGI is very simple to use and can be scored by nonprofessionals as well as mental health professionals. In this study, the same member of the nursing staff did bi-weekly ratings for all the patients during the entire 18-month study. While this ensured consistency, no estimates of reliability can be obtained from this procedure. The CGI was developed by the Psychopharmacology Research Branch of NIMH for use in drug evaluation studies. However, they have not published any data on its reliability or validity.

Tennessee Self-Concept Scale (TSC). The TSC contains 100 self-description items, each of which is rated by the subject on a 5-point scale from "completely false" to "completely true." Ninety of the items assess self-concept and 10 assess self-criticism. The self-criticism items are all MMPI Lie Scale items. The TSC employs a two-dimensional design. Identity, Self-satisfaction, and Behavior constitute one dimension; Physical self, Moral-ethical self, Personal self, Family self, and Social self are the second dimension. A total positive score reflects overall level of self-esteem.

William Fitts (1965) developed the TSC by creating a pool of items from surveys of literature on self-concept and from analyses of patient self-reports. The final selection of items included only those on which seven clinical psychologists showed perfect agreement when asked to classify each item into defined constructs. Thus content validity was built into the scale by its mode of construction. Unfortunately, there

has been little work directed toward empirical validation of the individual dimensions, e.g., what does the Family self score indicate behaviorally? However, the TSC has been used in over 100 doctoral and published studies, and is the most utilized instrument in the area of self-concept research. The Manual reports high correlations with other measures of personality functioning including $-.70$ with the Taylor Anxiety Scale, and in the $.50$'s and $.60$'s with several MMPI scales.

The norms reported in the Manual are based on a sample of 626 persons of varying age, sex, race, and socioeconomic status. The sample is overrepresented in the number of college students, white subjects, and persons in the 12-30 age range. No separate norms for psychiatric patients are reported. Test-retest reliability for most scales is in the high $.80$'s in a sample of college students. No information is presented on the internal consistency of the scales.

Social Avoidance and Distress Scale (SAD). The SAD consists of 28 items which the subject rates as true or false. It was designed to measure two aspects of social anxiety: 1) social avoidance, defined as "avoiding being with, talking to, or escaping from others for any reason" (Watson & Friend, 1969, p. 449); 2) social distress, defined as "the reported experience of a negative emotion, such as being upset, distressed, tense, or anxious in social situations" (p. 449). Careful psychometric procedures were employed by Watson and Friend (1969) in order to suppress response style errors, foster scale homogeneity, and foster discriminant and convergent relationships with specific other scales.

In studies with undergraduates at the University of Toronto, the

mean biserial correlation of each item with the whole scale was .77, and the one-month test-retest reliability was .68 in one study and .79 in a second study. In experimental studies with the same population, SAD scores were significantly related to self-reports of interest in participating in group discussions, "nervousness" about participating in a group discussion, preference to work alone, and amount of talking reported in social situations. Correlational studies have shown moderate relationships with measures of general anxiety including the Taylor Manifest Anxiety Scale (.54) as well as measures of social anxiety such as the social and evaluative sections of the Endler-Hunt S-R Inventory of Anxiousness (.45).

Relapse. Relapse was operationally defined as a significant exacerbation of the nuclear schizophrenic symptoms (hallucinations, delusions, and incoherent speech) on the PAS. The patient's ratings of symptomatology at discharge was used as the baseline level. Two modes of relapse were derived from the PAS scores:

- a) A total increase of three points on one or more of the three scales, excluding changes from 0 to 1 was considered a relapse. Zero represents symptoms absent, while 1 indicates symptoms at a level that is not pathological.
- b) If a change occurred on only one scale, a two-point increase was also designated a relapse providing that a maximum severity score of 4 was the result. Thus, score increases from 0 to 2 or from 1 to 3 by themselves did not constitute a relapse, but an increase from 2 to 4 did.

SST and HT patients were given the PAS at 1, 3, 6, and 9 months.

In addition, the patients were in contact with the research center's social worker on a weekly basis. Whenever the social worker found that a patient was experiencing an increase in symptoms, having trouble at work, in his board-and-care, or with his family, was speaking incoherently, or was hospitalized, one of the PAS interviewers conducted an assessment to determine if he had relapsed.

The MT patient's family was contacted monthly for information concerning the patient's condition. The same criteria were employed with regard to conducting PAS interviews to determine relapse. The patient was interviewed at 9 months if he had not relapsed prior to that point.

Hospitalization. The definition of hospitalization excluded emergency room visits, but included any incident where a patient resided at a hospital for 24 hours or more. Both voluntary and involuntary admissions were counted. The information was obtained primarily from contacts with the patient's family, but a PAS interviewer attempted to visit the patient while he was in the hospital as well.

Medication-Compliance. The SST and HT patients were categorized as medication-compliers and medication-refusers by the research center's social worker. The criterion for medication-refusal was one month off of prescribed medication or extreme irregularity in taking prescribed medication. The social worker found that many patients' accounts of their medication-taking behavior were not reliable, so some of her information came from their parents and board-and-care operators. Despite the attempt to utilize the objective criterion of one month, some judgment on the social worker's part was required for patients who were unreliable self-reporters or took medication on an irregular basis.

However, keeping track of medication-compliance was a major responsibility of hers during the study, and she made use of all available sources of information.

The same criteria were used for designating MT patients as compliers and refusers. However, the information was obtained monthly from the patient's relatives by the research center's secretary and by the PAS interviewer at the time of the relapse interview or the 9-month follow-up interview.

Procedures

Once the six patients were admitted to the Clinical Research Unit at Camarillo State Hospital, three were randomly assigned to the holistic program and three to the social skills training program. The first week was a baseline period and dependent measures were administered. For the remaining 9 weeks, patients participated in over 25 hours per week of therapy. The treatments were designed to control for amount of time spent in therapy by scheduling all sessions concurrently. To control for therapist personality effects, all six therapists rotated on a daily basis between both treatments. Therapists were trained in both procedures and were monitored on a random basis via a remote video camera to assure reliability. Two therapists participated in each of the daytime sessions, while the evening sessions were led by a single therapist.

Social Skills Training Procedures. The training was based on 250 roleplayed interpersonal problem situations which are critical for effective functioning in the social arenas of the hospital, the family,

and the community. The hospital and community scenes were standardized and included areas such as interacting with other patients, with nursing staff, with apartment managers, with human service agency officials, and with board-and-care staff. The family scenes were individualized for each patient based on the patient's report of problematic situations and an interview conducted with the patient's relatives.

The roleplaying sessions were held daily for two hours and included a standardized set of techniques designed to train the patient to:

- 1) Receive relevant interpersonal stimuli accurately.
- 2) Process these interpersonal stimuli, generate response alternatives and decide on a reasonable course of action.
- 3) Send the chosen response using appropriate verbal and non-verbal expressiveness.

The training format utilized the following series of questions administered following each roleplay:

Receive:

- a) Who spoke to you?
- b) What did _____ say?
- c) What was _____ feeling?
- d) What was the short term goal?
- e) What was the long term goal?

Process:

- a) Name one alternative you could do when _____ said _____?
- b) If you were to _____, what would the other feel?
- c) What could the other do?
- e) Would you get your short term goal?
- e) Would you use that alternative?

Send:

- a) How was your eye contact?
- b) How was your voice volume?

- c) How was your fluency?
- d) How was your tone?
- e) How was your posture?
- f) How was your facial expression?
- g) How were your gestures?

An incorrect answer resulted in a training procedure designed to highlight the relevant cue and thereby elicit the correct answer.

A set of 14 behavioral alternatives or response options was developed to fit most of the scenes:

- Compromise
- Terminate rudely
- Terminate politely
- Get angry
- Repeat your request
- Ask for assistance
- Highlight the importance of your need
- Comply with the other's request
- Refuse to comply with the other's request
- Explain your position
- Ask for more information
- Come back later (ask for appointment)
- Acknowledge the other's position and... (use one of the above)

The patient was taught to use these interpersonal strategies to generate concrete responses in each roleplayed situation. Each daily session covered six scenes. Since three patients were in the social skills training group, each roleplayed two scenes per session. However, the receiving and processing questions were divided up among all three patients, thereby ensuring active participation by all patients even when they were not roleplaying.

Two therapists conducted each session. One therapist acted out the roleplay with the patient. The other therapist introduced the situation by reading a script which gave the patient the setting and usually his initiating line. The roleplay sometimes terminated at the end of a single response by the patient, or continued for up to five minutes

depending upon the nature of the scene. At the end of the roleplay, the videotape recorder was stopped and the patient was asked the questions designed to assess and train their receiving, processing, and sending skills. Specific procedures were followed when the patient gave an incorrect answer. Generally, the relevant stimulus was highlighted and the question reasked. After two incorrect answers, the correct answer was provided and the patient was asked to repeat it.

During the last five weeks of the program, the emphasis switched from instrumental or goal-focused scenes to friendship and dating situations. Training in skills was gradually introduced including:

- Initiating a conversation
- Identifying topic areas
- Verbal and nonverbal listening skills
- Self-disclosure
- Changing the topic
- Terminating a conversation

Behavioral techniques such as instructions, modeling, roleplaying, feedback, reinforcement, and discrimination exercises were employed to teach these skills. As with the instrumental scenes, each session was planned in advance and identical from program to program.

During the Monday, Tuesday, and Thursday generalization sessions, scenes from the morning session were roleplayed in a different setting (on the unit instead of the research lab), with a different person (a member of the nursing staff), and then with a different response from the one practiced in the morning session.

A further strategy to promote generalization of training consisted of homework assignments. Each day the social skills patients

were asked to choose two tasks from a list of 40 covering hospital, community, family, and friendship situations. Trips into the surrounding community were scheduled for Monday and Wednesday afternoons to permit the patients to carry out the community homework.

One evening a week was devoted to training independent living skills. The areas covered during these sessions included grooming, use of telephones, community agencies, cooking, job interviews, transportation, laundromats, medicaid, budgeting, and money management.

A second weekly evening session was devoted to training in the cognitive areas of anger and stress control, assertive behavior, and long-term problem solving. During the anger and stress control component, the patient learned to employ coping self-talk during stressful and anger-provoking situations. While being videotaped, the patient recreated interpersonal situations that previously aroused anger and frustration. Then, while watching a playback of himself with the audio turned off, he rehearsed coping self-talk out loud. When he was able to sustain the coping self-talk out loud, the tape was replayed and he rehearsed coping self-talk covertly. Then, the situation was rehearsed "live" and the patient practiced coping self-talk while experiencing the stress or provocation directly.

The patient also learned to discriminate among passive, assertive, and aggressive behaviors by determining whether a particular action violated or protected his own and other persons' rights. He learned to use problem-solving techniques in situations that called for more complex alternatives than the 14 covered during the social skills training sessions, such as what to do about loneliness, or how to plan

for a long-term goal such as a career or marriage.

Aftercare planning was the focus of the Wednesday afternoon sessions. The social worker started meeting with the patients in the first week of the program. The sessions were organized around the various dimensions of life in the community: income, living arrangements, use of time, continued psychiatric treatment, education, vocational training, and employment. Individual plans were drawn up in each of these areas.

Family therapy took place on Wednesday evenings. The patients and their relatives met in a multiple family group. The first session covered the causes and treatment of schizophrenia. The next two meetings were devoted to problem identification, goal setting, and medication benefits and side effects. Subsequent sessions focused on building communication skills such as making positive statements, giving positive feedback to other family members, and reflective listening skills. Several sessions covered problem-solving skills utilizing a variety of hypothetical and then actual problems in the families.

It should be noted that the content and training techniques for all of the above sessions were worked out in advance. The therapist removed the materials for the session from a Pendaflex file or consulted the relevant manual. Thus, patients starting the program at different times received essentially the same treatment.

Table 1 presents the schedule of sessions and their time slots.

Holistic Stress-Management Procedures. The holistic program was based on the rationale that schizophrenic relapse is stress-related and controllable. Every weekday morning the patients participated in

TABLE 1

Social Skills Training Program Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
9:30 11:30	Roleplaying	Roleplaying	Roleplaying	Roleplaying	Roleplaying
12:30 2:00	Generalization	Generalization	Aftercare Planning	Generalization	
2:00 4:00	Community Homework		Community Homework		
7:00 8:30		Independent Living Skills	Family Therapy	Cognitive Training	

two hours of training in the stress-reduction techniques of aerobic exercise and relaxation.

On Monday, Wednesday, and Friday mornings the patients traversed a 1.8-mile route around the grounds of Camarillo State Hospital. At first the pace was a brisk walk. As their endurance improved, short stretches of jogging were added. Times to complete the course were taken at several points during the nine-week program.

On Tuesday, Thursday, and rainy days, the exercise activity took place in the hospital gym. Sports, weight-lifting, and exercycling provided the patient with alternative stress-reduction techniques in order to maximize the likelihood of his selecting one of these techniques to practice on a regular basis in the community.

The relaxation regimen involving yoga and meditation in the holistic program did not initially gain the patients' compliance. Despite repeated instructions, the patients sat with their eyes open and were preoccupied with their shoe laces and glancing at one another. However, a procedure was developed which seemed to produce adherence to the task. The meditation instruction started with a one-week period of listening to meditation music with eyes closed for 20 minutes. This acclimated patients to sitting quietly with eyes closed. During the second week, chanting "om shanti" for five minutes out loud and in unison was introduced. Chanting seemed to develop the right mood and started the patient in the mantra repetition process in a manner that was publicly monitorable. Then, each patient and therapist selected a personal mantra for use in private meditation. A tape developed by Patricia Carrington, Ph.D., was used to introduce the

meditation procedure. Subsequently, the daily meditation session included five minutes of public chanting and 15 minutes of private meditation.

On Tuesday and Thursday afternoons, patients participated in an educational program. The curriculum of the stress-management program was designed to teach the patient strategies for controlling stress. The program consisted of 16 1½-hour sessions which made use of audiotapes, written exercises, homework assignments, structured discussions, and art therapy.

The tapes created by this author presented the treatment rationale that schizophrenic relapse is stress-related and controllable. Patients learned a three-step model for the development of stress and techniques for reducing stress at each step. They learned the role of stressors in triggering schizophrenic episodes and how lifestyle factors could increase their threshold for stress tolerance. The 16 tapes lasted from 10-15 minutes and were designed to maximize comprehension by patients characterized by deficits in attention and information processing. An accompanying handout covering the key concepts with simplified diagrams and graphs was given to each patient during the taped presentation. Following the tape, the therapists conducted a structured discussion following a Discussion Guide. The discussion was designed to elicit the major points of the day's session from the patients, and to help them apply the ideas to their own lives. A six-item quiz provided a final check on their comprehension, and any gaps in their understanding were remedied. Many sessions included written assignments as well. For example, each patient filled

out a Relapse Stressors Form which elicited the precipitating environmental and lifestyle stressors in the month which preceded previous hospitalizations. This information was used to increase the patient's awareness of the relationship between stress and his schizophrenic episodes. Strategies to minimize future exposure to the stressors associated with previous relapses were developed as the result of this session. Other sessions asked the patient to monitor his stress level and record incidents of stress for homework. This information was used to enable the patient to recognize his stress-warning signs.

The sessions ended with art therapy based on the day's topic, e.g., draw an environment containing many of your relapse stressors; draw the feeling of relaxation you get while meditating. The use of such varied teaching formats as tapes, discussions, written exercises, homework assignments, quizzes, and art was designed to increase the impact of the treatment by involving the patient in actively applying these concepts and skills in a variety of modalities and situations. Table 2 gives an outline of the topics covered in each session.

In addition to stress-management training for controlling relapses, the holistic program emphasized that illness provides the patient with an opportunity for growth and change. The turmoil of schizophrenia, in particular, may unleash material from the mind's depths that could become a tremendous source of self-understanding and direction in a person's life. A series of audiotapes were developed which focused on the positive aspects of psychotic experiences by presenting accounts of people who emerged healthier and happier than before. Other tapes described individuals whose schizophrenic experiences

TABLE 2

Outline of Tuesday and Thursday Afternoon Stress Management

Education Sessions

<u>WEEK</u>	<u>DAY</u>	<u>MATERIAL</u>
1	Tuesday	<u>What is Holistic Health?</u> Tape, Attention Check Quiz, Discussion Guide Presentation of the basic principles emphasizing self-responsibility Schizophrenia as a psychosomatic illness of the brain resulting from prolonged stress Art therapy: draw a picture that expresses yourself taking good care of your brain.
1	Thursday	<u>Stress and Illness</u> Tape, Attention Check Quiz, Discussion Guide The Fight or Flight Response The effects of prolonged stress on the body Relapse of schizophrenia triggered by stressors Art therapy: draw a picture of how you feel when having a Fight or Flight Response. Draw a picture of stress affecting the brain.
2	Tuesday	<u>Recognizing Stress</u> Tape, Attention Check Quiz, Discussion Guide The bodily, mental and behavioral signs of stress Art therapy: draw a picture of your bodily, mental, and behavioral stress warning signs.
2	Thursday	<u>What Causes Stress</u> Tape, Attention Check Quiz A three-step model for the development of stress: stressor, the stress filter, the coping response Art therapy: think of a specific stressful incident and draw the stressor, your stress filter, and then your coping response.
3	Tuesday	<u>Meditation Training</u> Tape, Mantra List Patients choose a mantra from a list of 16 Tape #3 from Patricia Carrington's Meditation Training Program is used to introduce the technique.

<u>WEEK</u>	<u>DAY</u>	<u>MATERIAL</u>
3	Thursday	<p><u>Managing Stressors: Universal Stressors</u> Tape, Attention Check Quiz, Discussion Guide The major factors that cause disharmony and can lead to illness: overstimulation, isolation, poverty and life changes.</p>
4	Tuesday	<p><u>Managing Stressors: Your Relapse Stressors</u> Tape, Attention Check Quiz, Relapse Stressor Form, Discussion Guide The Relapse Stressor Form is filled out for the month period preceding each hospitalization. A list of known relapse stressors is compiled from this information. Art therapy: draw a picture of an environment filled with your relapse stressors. Draw an environment without any of your relapse stressors.</p>
4	Thursday	<p><u>Strengthening Your Stress Filter: Aerobic Exercise</u> Tape, Attention Check Quiz, Discussion Guide Cardiovascular fitness improves general health and brings increased oxygen and nutrients to the brain. Exercise burns up stress hormones in the blood. Exercise builds up a cross-tolerance to stress. Art therapy: draw yourself building resistance to stress by exercising. Draw yourself using exercise to reduce stress.</p>
5	Tuesday	<p><u>Strengthening Your Stress Filter: Meditation</u> Tape, Attention Check Quiz, Discussion Guide Meditation produces a relaxation response that is the opposite of the stress response. Meditation produces a state of hypersynchrony where the brain waves from the right and left hemispheres are synchronized. Art therapy: draw the feeling of relaxation you get while meditating. Draw the state of hypersynchrony between the right and left brains while meditating.</p>
5	Thursday	<p><u>Strengthening Your Stress Filter: Medication</u> Tape, Attention Check Quiz, Discussion Guide Medication reduces the arousal of the autonomic nervous system, slowing down the Fight or Flight response. Medication equalizes arousal between the right and left sides of the brain.</p>

<u>WEEK</u>	<u>DAY</u>	<u>MATERIAL</u>
5	Thursday (continued)	Medication reduces the chance of relapse. Art Therapy: draw a picture that represents the benefits of medication.
6	Tuesday	<u>Strengthening Your Stress Filter: Nutrition I</u> Tape, Attention Check Quiz, Discussion Guide The basics of preventive nutrition The "white" plague - white sugar and white flour Art therapy: draw a picture of your favorite junk foods and how they can affect your body. Draw a picture of your favorite health promoting foods and how they affect your body.
6	Thursday	<u>Strengthening Your Stress Filter: Nutrition II</u> Salad ingredients, utensils Preparing a healthy meal
7	Tuesday	<u>Developing Constructive Coping Responses I</u> Tape, Attention Check Quiz, Discussion Guide Destructive coping responses and how to avoid them Art therapy: draw a destructive coping response that you have used in the past and the negative effects it had.
7	Thursday	<u>Developing Constructive Coping Responses II</u> Tape, Attention Check Quiz, Discussion Guide Constructive coping responses for different kinds of stressors Developing specific stress reduction plans Art therapy: draw yourself using constructive coping responses and reducing stress.
8	Tuesday	<u>Developing Constructive Coping Responses III</u> Tape, Attention Check Quiz, Discussion Guide Constructive thinking versus stress thinking Art therapy: draw a cartoon with a balloon containing examples of your stress thinking and how you feel. Draw a cartoon with a balloon containing examples of constructive thinking.
8	Thursday	<u>Aftercare Lifestyle and Environmental Goals I</u> Tape, Attention Check Quiz, Discussion Guide Learning your stress warning signs Setting goals that will minimize your exposure to your known relapse stressors Art therapy: draw your most important stress warning signs. Draw yourself achieving your goals.

<u>WEEK</u>	<u>DAY</u>	<u>MATERIAL</u>
9	Tuesday	<u>Aftercare Lifestyle and Environmental Goals II</u> Tape, Attention Check Quiz, Discussion Guide Setting goals for developing a regular stress reduction program Art therapy: draw yourself carrying out your stress reduction plan.
9	Thursday	<u>Make-up Session or Review Session</u>

enabled them to become successful cultural innovators, visionaries, religious mystics, shamans, and artists. This component of the program was designed to bolster the patient's self-image which usually had been damaged by the stigma and demoralizing experience of hospitalization, promote self-disclosure of the contents of the patient's psychotic experiences, and initiate exploration for meaning in those experiences through nonverbal techniques. Table 3 outlines the topics covered during the Tuesday evening sessions.

To further mobilize the patient's beliefs regarding his ability to recover, the Monday afternoon sessions were modeled after the Simon-tons' (1978) innovative visualization techniques for cancer patients. The patient drew and visualized his brain becoming healthier and the two hemispheres cooperating more harmoniously with each other. The visualization images are based on Julian Jaynes' (1978) theory that schizophrenia is a stress-induced disharmony between the right and left brains. This theory provided the schizophrenic with a scientific explanation for his unusual mental experiences and seemed to have a healing effect by replacing the fear of the unknown with a "sense of understanding."

Other aspects of successful functioning in the community such as setting and achieving goals were discussed, visualized, and expressed in art therapy. The objective was to mobilize the patient's positive expectations about his ability to stay well and achieve his goals while in the community. Table 4 outlines the topics covered during the Monday afternoon sessions.

One evening a week was devoted to exercises culled from

TABLE 3

Outline of Tuesday Evening Holistic "Growth and

Schizophrenia" Sessions

1. Schizophrenia as a Growth Experience
The case of Beatrice who emerged from her psychotic experience healthier and happier than before
Quotation on the relationship between schizophrenia and growth
Art therapy: draw a picture that represents personal growth to you.
2. A Closer Look at Your Schizophrenic Experience I
The feelings, thoughts and experiences of schizophrenia
The Kink's song, "Acute Schizophrenia Paranoia Blues"
Art therapy: draw a picture expressing the new feelings, thoughts and experiences you had during your schizophrenia experience.
3. Schizophrenia and Social Change: Handsome Lake
An American Indian whose visions and hallucinations were the basis for a new religion among the 18th century Iroquois Nation
Art therapy: draw yourself as a prophet whose visions help create a new society or religion.
4. Schizophrenia and Personal Change: Indian Vision Quests
The similarities between the self-induced altered states of consciousness of Indians seeking their identities and the acute schizophrenic.
Art therapy: draw yourself as an Indian during a vision quest. Include elements from your own schizophrenic experience, such as animals encountered.
5. Schizophrenia and Healing: The Shaman
The shaman is called to his respected position as the tribal healer following an acute schizophrenic experience.
Art therapy: draw yourself as a shaman in a primitive tribe who can help to heal other people.
6. Schizophrenia and Religion: Mysticism
The similarities between deeply religious experiences and schizophrenic experiences.
Art therapy: draw a picture representing any religious or highly meaningful part of your schizophrenic experience.
7. Schizophrenia and Art: Perceptual Alteration]
The enhancement of Vincent Van Gogh's creativity as he expressed the altered states of perception of his psychosis.

7. Art therapy: draw a picture of an altered state of perception that you experienced during your schizophrenic episode.
8. Schizophrenia and Art: Artists with Visions
Allen Ginsburg, a poet whose visionary experiences were a turning point in his work, but also landed him in a psychiatric hospital with a diagnosis of schizophrenia
Art therapy: draw a picture of yourself with enhanced personal creativity and making use of it.
9. A Closer Look at Your Schizophrenic Experience II
How have you changed as a result of your schizophrenic experience? What new experiences, insights, feelings and thoughts did you have?
Art therapy: draw a picture that expresses these changes.

TABLE 4

Outline of Monday Afternoon "Developing Positive Beliefs"

Sessions

WEEK	MATERIAL
1	<u>Introduction to the Holistic Program and Schedule</u> <u>Tape, Attention Check Quiz, Discussion Guide</u> Presentation of daily schedule Rationales for running, meditation and other program components
2	<u>What is Schizophrenia: The Split Brain Theory</u> <u>Tape, Attention Check Quiz, Discussion Guide</u> The explanation of schizophrenia as the result of right brain/left brain disharmony Presentation of simplified pictures illustrating this Art therapy: draw a picture that represents the state of disharmony between your left and right brains as you experience it.
3	<u>What is Schizophrenia II</u> <u>Tape, Attention Check Quiz, Discussion Guide</u> Review of Split Brain Theory Hallucination, thought insertion and delusions of control explained by this theory Art therapy: redraw previous week's picture to represent greater harmony between the right and left brains.
4	<u>What is Schizophrenia III</u> <u>Tape, Attention Check Quiz, Discussion Guide</u> Additional information on hallucinations Presentation of new pictures illustrating the Split Brain Art therapy: Continue work on developing a positive image of right brain/left brain harmony.
5	<u>Developing Positive Beliefs About Your Ability to Live with Schizophrenia</u> <u>Tape, Attention Check Quiz</u> Commonly held negative beliefs about schizophrenia

WEEK	MATERIAL
6	<u>Developing Positive Life Goals I</u> Tape, Attention Check Quiz, Discussion Guide Importance of having concrete goals and a time-frame for achieving them Developmental tasks of different life stages Art therapy: draw a picture of yourself achieving your most important goal.
7	<u>Developing Positive Life Goals II</u> Continuation of previous session
8	<u>Staying Well in the Community</u> Developing positive expectations of your ability to stay well and achieve goals while in the community Art therapy: draw a picture of yourself 5 years from now.
9	<u>Overcoming Fears about Readjustment</u> Discussion of last-minute fears about going to live in the community

humanistic psychology and educational sources which were designed to promote development of a positive self-image. The importance of maintaining a positive self-image was emphasized, and the exercises helped to catalog a variety of the patient's assets and good qualities. The specific exercises utilized are listed in Table 5.

Patients in the holistic program were also in a weekly aftercare group with a social worker which focused on developing concrete goals and plans. The holistic patients joined the social skills patients when they went into the community for their homework assignments. Therefore, both groups spent equal time in the community. Family therapy for holistic patients was conducted by the unit psychiatrist. During these weekly sessions, the families were encouraged to confront conflicts, discuss them, ventilate feelings, make future plans, and gain insight into their relationships. Table 6 presents the schedule of sessions and their times.

Minimal Treatment Procedures. The MT patients received the standard Camarillo State Hospital treatment given on the short-term, acute units. While the nine acute units vary in the details of their programs, the typical treatment regimen for the MT patients consisted of 2-8 weeks of chemotherapy and participation in group therapy sessions two or three times a week. The current treatment philosophy in California deemphasizes hospital treatment in favor of community-based programs. The role of the hospital is to help the patient recover from his/her psychotic episode and then provide a referral for continuing care and therapy in community-based facilities. Intensive therapy is not meant to be part of the treatment provided by the hospital, thus

TABLE 5

Outline of Thursday Evening Self-Esteem Sessions

WEEK	MATERIAL
1	<u>Importance of Self-Esteem</u> Discussion of 5 quotations dealing with self-esteem Each person picks out his favorite and gives his reasons for selecting it Art therapy: select one of a list of 20 quotations and draw a poster based on the quotation.
2	<u>Nature Walk</u> A walk to the picnic grounds at dusk Watch the sunset Unstructured discussion on the importance of being connected to nature
3	<u>Coat of Arms</u> Art exercise of drawing one's strengths as a friend, family member, worker, athlete Discussion of each of these areas
4	<u>"Who Am I" Collage</u> Cutting out pictures from magazines and making a collage that expresses your uniqueness Discussion on each person's collage
5	<u>Magic Circle Discussion</u> Topics focus on success experiences and skills
6	<u>Commercial for Myself</u> Compose an advertisement for yourself. It can be a radio ad to be read out loud or a magazine ad with a picture.
7	<u>Magic Circle Discussion</u> Problems and fears that you have dealt with Problems and fears still to face

Table 5

WEEK	MATERIAL
8	<u>Self-esteem Tree</u> Exercise focusing on the roots of one's self-esteem
9	<u>Maintaining Self-esteem in the Community</u> Open discussion of upcoming readjustment and threats to self-esteem

TABLE 6

Holistic Stress Management Program Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
9:30 11:30	Yoga Jogging Meditation	Yoga Gym Meditation	Yoga Jogging Meditation	Yoga Gym Meditation	Yoga Jogging Meditation
12:30 2:00	Developing Positive Beliefs	Stress Management Education	Aftercare and Leisure Counseling	Stress Management Education	
2:00 4:00	Community Trip		Community Trip		
7:00 8:30	Family Therapy	Growth and Schizophrenia	Learning to Love Yourself		

making these patients an appropriate Minimal Treatment control group.

CHAPTER IV

RESULTS

Preliminary Analyses

Prior to testing the hypotheses, the data was subjected to two preliminary analyses. Even though analysis of covariance (ANCOVA) is designed to control for pretreatment differences, preliminary analyses of variance (ANOVA) were conducted on each dependent measure to see whether significant pretreatment differences did exist between the HT and SST groups. Of the 23 dependent measures, only the Anxiety subscale of the PAS showed a significant difference at the .05 level ($F=4.45$, $df=1,26$, $p<.05$). Since there were 23 such tests, the likelihood of one significant difference at the .05 level is quite high. The lack of significant differences on 22 of the 23 dependent measures argues for the pretreatment equivalence of the HT and SST groups.

The results for each dependent measure were also tested for homogeneity of within-group regression. Homogeneity of within-group regression is one of the assumptions of the ANCOVA. There were three cases where this assumption was not met. The Depression subscale of the PAS was one of the measures which did not show homogeneity. Since there were two other measures of depression which could also be utilized to test Hypothesis 3, and since none of the measures showed significant results, the lack of homogeneity was not critical

for testing the hypothesis.

However, in the case of the Total Self-concept scale of the TSC, there were no other measures which could be employed to test Hypothesis 4. Lack of homogeneity of within-group regression indicates that the relationship between the pretreatment and posttreatment scores was not the same for both groups, i.e., the regression coefficient was not constant within each of the populations. However, there is an alternative technique for such situations which involves graphing the data and using the Johnson-Neuymann technique. Because the preliminary analysis indicated that ANCOVA could not be used with the self-concept data, this alternative procedure was employed. A more complete description of the Johnson-Neuymann technique appears in the section on self-concept (Hypothesis 4).

The third case which lacked homogeneity of within-group regression was the Social-self subscale of the TSC. There were two other measures of social skills. However, one showed a significant difference and the other did not. Therefore, the Johnson-Neuymann technique was also employed to try to extract additional information which would bear on Hypothesis 5.

Treatment Phase

Overall Symptomatology. Hypothesis 1 predicted no significant differences between the HT and SST treatments on the measures of overall symptomatology. Symptoms were assessed from three different perspectives. The patient's self-report of symptom-related distress was derived from the SCL-90. An interview assessment was obtained from the research unit psychiatrist's report on the PAS. The

nursing staff's view was recorded using the CGI scale. The subscale and summary scores for each of these three instruments were subjected to separate 2(HT, SST Groups) X 2(Pre, Posttreatment) analyses of covariance, with the pretreatment score serving as the covariate and the posttreatment score as the dependent variable. The means and results of these analyses are presented in Tables 7, 8, and 9.

For the purposes of Hypothesis 1, the results of the analyses on the summary scores are most critical. As can be seen in Tables 7, 8, and 9, none of the summary scores showed a significant difference between the two treatments at the .05 level. Despite this lack of significant findings, which was predicted by Hypothesis 1, an important pattern emerges when the direction of differences in all the various subscales is examined. Table 10 shows that the HT patients had lower posttreatment adjusted means on seven of the eight subscales of the PAS, seven of the nine subscales of the SCL-90 (with one tie), and both scales of the CGI. Thus, the HT group had a lower level of symptomatology on 16 of the 19 subscales. They also had lower scores on the PAS total and the three SCL-90 summary indexes.

If both treatments were equally effective, it would be expected that half of the differences would favor the HT treatment and half would favor the SST treatment. Since there are only these two possible outcomes-- $SST > HT$ or $HT < SST$, the results of the 19 measures can be conceptualized as a Bernoulli process. In order to test whether the observed pattern of differences among the scores represents a significant deviation from a random distribution of 19 trials each with an

TABLE 7
Pre- and Posttreatment SCL-90

	Pre	Post	Adjusted Mean	<u>F</u>	p
<u>Somatization</u>					
SST (14)	.75	.41	.45	.02	ns
HT (12)	.96	.51	.47		
<u>Obsessive- Compulsive</u>					
SST (14)	1.18	.85	.92	1.77	ns
HT (12)	1.39	.66	.58		
<u>Interpersonal Sensitivity</u>					
SST (14)	1.10	1.01	1.00	3.33	$p < .10$
HT (12)	1.09	.53	.53		
<u>Depression</u>					
SST (14)	1.53	1.16	1.13	.84	ns
HT (12)	1.38	.81	.85		
<u>Anxiety</u>					
SST (14)	1.19	.66	.63	.00	ns
HT (12)	1.08	.60	.63		
<u>Hostility</u>					
SST (14)	.69	.51	.50	.07	ns
HT (12)	.65	.44	.45		
<u>Phobic Anxiety</u>					
SST (14)	.83	.68	.68	1.33	ns
HT (12)	.83	.40	.40		

TABLE 7 (Continued)

	Pre	Post	Adjusted Mean	<u>F</u>	<u>p</u>
<u>Paranoid Ideation</u>					
SST (14)	1.26	.88	.85	.02	ns
HT (12)	1.12	.77	.81		
<u>Psychoticism</u>					
SST (14)	1.24	.81	.78	.30	ns
HT (12)	1.00	.58	.62		
<u>PST</u>					
SST (14)	55.50	38.79	37.74	.03	ns
Ht (12)	51.92	35.17	36.39		
<u>GSI</u>					
SST (14)	1.20	.81	.78	.50	ns
HT (12)	1.08	.60	.63		
<u>PSDI</u>					
SST (14)	1.85	1.73	1.72	1.64	ns
HT (14)	1.81	1.49	1.50		

Scale: 0 = not at all
 1 = a little bit
 2 = moderately
 3 = quite a bit
 4 = extremely

PST Positive Symptom Total = No. of items rated as causing distress

GSI General Symptom Index = Sum of all items

No. if items in SCL-90

PSDI Positive Symptom Distress Index = Sum of all items

PST

TABLE 8
Pre- and Posttreatment PAS

	Pre	Post	Adjusted Mean	F	p
<u>Anxiety</u>					
SST(14)	1.29	1.43	1.48	.23	ns
HT(14)	2.00	1.36	1.30		
<u>Depression</u>					
SST(14)	1.50	.93	.85	.86	ns
HT(14)	.86	.43	.51		
<u>Retardation</u>					
SST(14)	1.07	.64	.56	2.53	$p < .15$
HT(14)	.71	.14	.22		
<u>Delusions</u>					
SST(14)	2.64	1.50	1.62	.07	ns
HT(14)	3.07	1.57	1.45		
<u>Hallucinations</u>					
SST(14)	2.00	1.79	1.70	.65	ns
HT(14)	1.71	1.21	1.30		
<u>Incoherence</u>					
SST(14)	1.21	.57	.62	.07	ns
HT(14)	1.50	.57	.52		
<u>Flat Affect</u>					
SST(14)	1.86	1.21	1.21	.19	ns
HT(14)	1.86	1.07	1.07		
<u>Poverty of Speech</u>					
SST(14)	1.57	.64	.65	.03	ns
HT(14)	1.64	.71	.71		
<u>Total</u>					
SST(14)	13.14	8.21	8.29	.44	ns
HT(14)	13.36	7.07	7.00		

Scale: 0 = absent
1 = mild
2 = moderate
3 = marked
4 = severe

TABLE 9
CGI Rated by Nursing Staff

	Pre	Post	Adjusted Mean	<u>F</u>	<u>p</u>
<u>Severity</u>					
SST(14)	3.43	2.79	2.97	.84	ns
HT(14)	4.00	2.79	2.60		
<hr/>					
<u>Improvement*</u>				<u>t</u>	<u>p</u>
SST(14)		3.57		.93	ns
HT(14)		3.14			

Improvement Code

- 1 - very much improved
- 2 = much improved
- 3 - minimally improved
- 4 = no change
- 5 = minimally worse
- 6 = much worse
- 7 = very much worse

Severity Code

- 1 = normal, not at all ill
- 2 = borderline mentally ill
- 3 = mildly ill
- 4 = moderately ill
- 5 = markedly ill
- 6 = severely ill
- 7 = among most extremely ill

*The instructions for rating this scale state: "Compared to his condition at admission to the project, how much has he changed?" Therefore, only the posttreatment score was utilized and no covariance analysis was performed.

equal probability of success for the HT and SST treatments, the sign test was selected. The sign test assumes independence between the various observations (Hays, 1973). In the following analysis, the subscales are treated as observations, but they are not truly independent because the subscales correlate with each other. Because of the lack of an alternative statistical option to handle this situation, the clearly redundant summary scores were eliminated and the test was performed. The sign test was significant at the .001 level (Table 10). While the violation of the independence assumption renders this finding less secure, it confirms what visual inspection of the results also clearly reveals: a small but consistent difference in favor of the HT treatment in the posttreatment level of symptomatology. The validity of this finding is buttressed by the consistency across a wide range of symptoms--including both neurotic dimensions (such as anxiety and depression), and psychotic dimensions (such as hallucinations and delusions), as well as across the three different rating modes: self-report, psychiatric interview, and nursing staff observation.

Anxiety. Hypothesis 2 predicted that the HT patients would have lower scores on the measures of anxiety because of their daily training in relaxation techniques, exercise, and stress management. This hypothesis can be evaluated by examining the results of the analyses of covariance on the anxiety subscales of the PAS and the SCL-90 (see Tables 7 and 8). Neither analysis yielded significant effects. While the HT group showed a lower posttreatment adjusted mean on the PAS anxiety subscale, the difference was not significant (1.30

TABLE 10

Sign Test for Subscales of Symptom Ratings

<u>PAS</u>	<u>Sign</u>
Depression	+
Anxiety	+
Flat Affect	+
Motor Retardation	+
Delusions	+
Hallucinations	+
Incoherence	+
Poverty of Speech	-

SCL-90

Anxiety	0
Depression	+
Somatization	-
Obsessive-Compulsive	+
Interpersonal Sensitivity	+
Hostility	+
Phobic Anxiety	+
Paranoid Ideation	+
Psychoticism	+

CGI

Severity	+
Improvement*	+

Total: 16 +
 2 -
 1 0

sign test for $N=18$ $r=16$ $p=.5$ is
 significant with $p<.001$

+ HT posttreatment adjusted mean lower
 - SST posttreatment adjusted mean lower
 0 tie

* unadjusted posttreatment mean used

versus 1.48, $p > .10$). However, the level of anxiety in the SST group actually increased from 1.29 to 1.43 over the course of the program (Table 8). The HT patients' scores declined from a mean of 2.00 to 1.36 during the program.

On the SCL-90, the patients' self-reports of anxiety declined in both groups, and the adjusted posttreatment means were identical: .63. Thus, evidence for a stronger effect of the HT treatment on anxiety was not found, although the HT treatment did reduce anxiety on both the self-report and interview ratings.

Depression. Because running has been founded to be a successful treatment for depression in a study of John Griest (1978), Hypothesis 3 predicted that the HT patients would show a greater reduction in depression than the SST patients. The results of the analyses of the depression subscales on the PAS and the SCL-90 are presented in Tables 7 and 8.

Both the mean adjusted for covariance effects and the unadjusted mean on the PAS Depression subscale were lower at posttest in the HT group than in the SST group: adjusted .51 versus .85; unadjusted .43 versus .93. However, both treatments produced a reduction in depression and the difference was not significant. On the PAS Motor Retardation subscale, the difference between the two treatments approached significance ($F = 2.53$, $df = 1, 25$, $p < .15$). Both groups showed a reduction, but the adjusted posttreatment mean for the HT group was .22 versus .56 for the SST group. Since the scale extends from 0 to 4, both of these scores were quite low. On the SCL-90, the adjusted posttreatment mean on the Depression subscale also favored

the HT group, .85 versus 1.13. While all three measures of depression were in the predicted direction favoring the HT program, none of these findings achieved statistical significance, and therefore Hypothesis 3 cannot be considered to have been confirmed.

Self-concept. Hypothesis 4 predicted that the HT group would show greater improvement in self-concept on the TSC because the HT program had a weekly group which focused on building self-esteem. As discussed in the section on preliminary analyses, the assumptions for ANCOVA were not met for the TSC self-concept data. Therefore, the data were graphed and the Johnson-Neuymann technique was applied. Figure 1 shows the raw data and regression lines for both groups. The correlation coefficient for the HT group was .02 indicating that there was no relationship between the HT patients' pre- and posttreatment scores. However, the HT mean improved from 296.15 to 317.08, from the 6th to the 19th percentile. The SST patients showed a .85 correlation between pre- and posttreatment scores indicating a strong linear relationship, but there was very little change in their mean over the course of treatment (331.00 to 332.86).

The Johnson-Neuymann technique is useful in situations where there is a significant difference in the regression coefficients between two groups. The procedure:

enables the researcher to establish regions of significance, thereby making it possible to state within what ranges of the X scores subjects from the different groups differ significantly on Y, and within what range of X subjects from different groups do not differ significantly on Y (Kerlinger & Pedhazur, 1973, p. 256).

For the TSC Total results, the region of nonsignificance was between 188.85 and 549.63. This means there should not be significant

differences between the two treatments at posttest among people who score between 188.85 and 549.63 at pretest. However, individuals scoring below 188.85 would be expected to show larger improvements in the HT program, while people who score above 549.63 would do better in the SST program. Since the maximum scale score possible on the TSC is 450, and a score of 188.85 is below the .10 percentile, the region of nonsignificance encompasses virtually the entire spectrum of possible scores. Therefore, the TSC results indicate that there was no difference between the HT and SST treatments.

Social Skills. Hypothesis 5 predicted that the SST group would perform better on the social skills measures. There were three self-report measures related to social skills employed in this study. The SAD scale and SCL-90 Interpersonal Sensitivity subscale data were analyzed using ANCOVA. The TSC Social self data did not meet the assumptions for ANCOVA of homogeneity of within-group regression. Therefore, the data were graphed and the Johnson-Neuymann technique applied.

On the SAD scale, the difference between the HT and SST groups was nonsignificant (Table 11, $p > .10$). However, the difference between the HT and SST groups on the SCL-90 subscale was the only posttreatment finding to approach significance (Table 7, $F_{3,33}$, $df=1,23$, $p < .10$), and it favored the HT group. The HT group showed a .56 reduction whereas the SST group improved only slightly-- .09.

Figure 2 shows the raw data and regression lines for the TSC Social self data from both groups. The region of nonsignificance extends through most of the likely test scores, from 57.07 to 75.76.

Table 11

Pre- and Posttreatment Tennessee Self-Concept and SAD Scores

	Pre	Post	Adjusted Mean	<u>F</u>	<u>p</u>
<u>TSC Total</u>					
SST (14)	331.00 (28th %)	332.86 (30th %)	319.28	.39	ns
HT (13)	296.15 (6th %)	317.08 (19th %)	331.70		

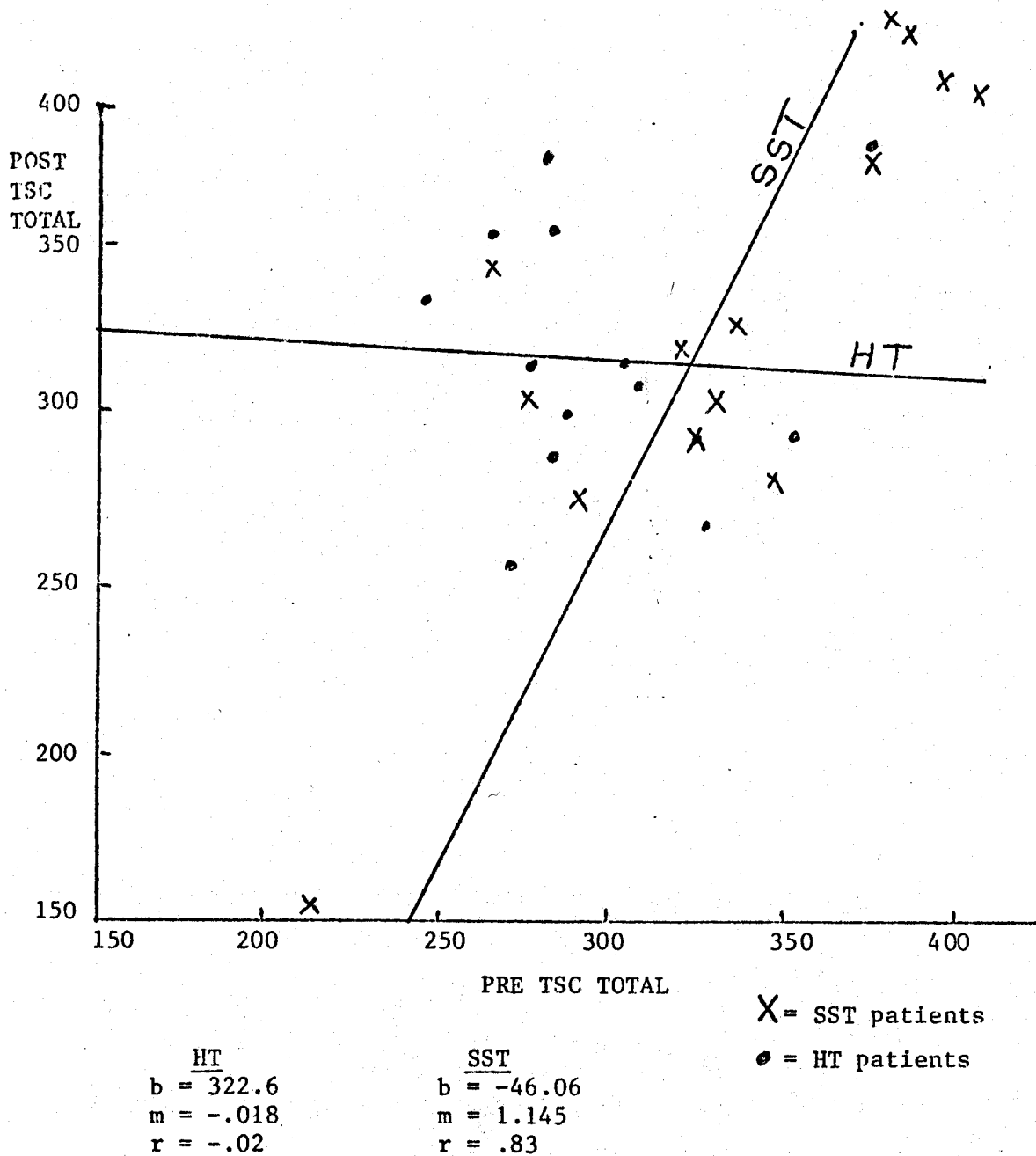
Test that means of covariate (pre) are equal: $\underline{F} = 3.72$, $\underline{df} = 1, 25$, $\underline{p} < .05$

Test for homogeneity of within-group regression: $\underline{F} = 8.83$, $\underline{df} = 1, 25$,
TSC Social Self $\underline{p} < .01$

SST (14)	65.57 (45th %)	65.86 (45th %)	63.46	.41	ns
HT (13)	58.69 (38th %)	63.69 (43rd %)	66.28		

Test for homogeneity of within-group regression: $\underline{F} = 8.90$, $\underline{df} = 1, 25$,
SAD Scale $\underline{p} < .01$

SST (13)	12.15	9.92	10.13	.54	ns
HT (13)	13.80	10.15	9.69		



Johnson-Neuymen Region of Nonsignificance ($\alpha = .05$): 188.85-549.63

Figure 1. Raw Data and Regression Lines of HT and SST TSC Total Scores

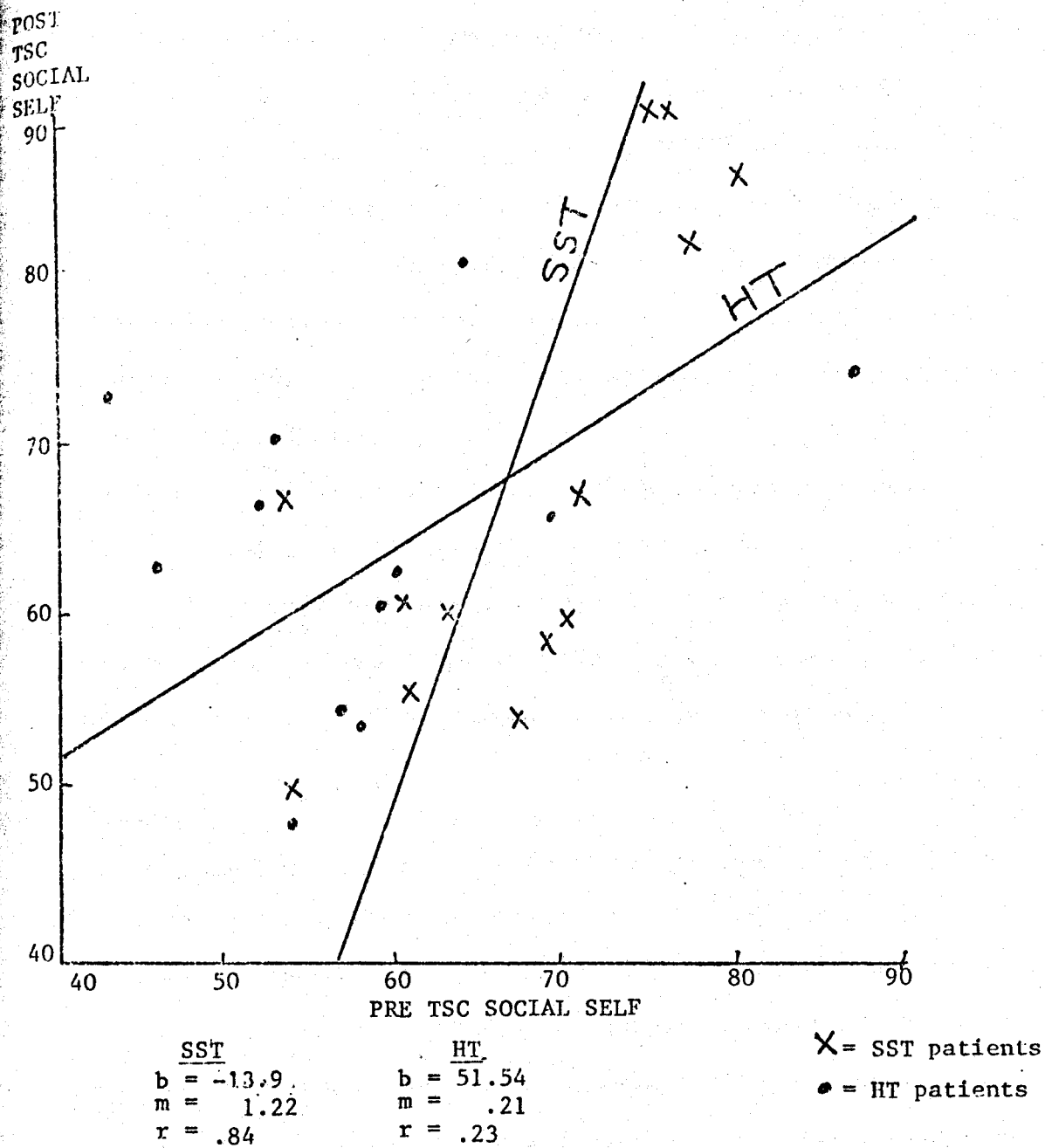


Figure 2. Raw Data and Regression Lines of HT and SST TSC Social Self Scores

This range covers the 3rd to 82nd percentiles. The SST group showed a .84 correlation between pre- and post scores, while the correlation for the HT group was only .23. Thus, there was little relationship between the HT patients pre- and post scores. In terms of means, the SST group changed very little---.31, while the HT group improved 5.00 points (Table 11). However, both scores were in the range of nonsignificance indicating that there was no significant difference between the two treatments.

The self-report data did not confirm the prediction of Hypothesis 5 that the SST group would do better on the social skills related measures. In two of the three tests, the HT group showed greater improvement, and on the Interpersonal Sensitivity subscale, the difference approached significance in favor of the HT treatment.

Community Phase

Follow-up Periods and Attrition. All participants in the HT and SST treatment programs were scheduled for assessments at 1, 3, and 9 months posttreatment. In addition, any indication of an exacerbation of symptoms, such as an increase in the subject's medication, the social worker's or parent's report of withdrawal or incoherency, or hospitalization, resulted in an immediate evaluation of the subject's symptoms.

Loss of subjects over time varied among the different measures. The observer-rated measures had the lowest attrition rate. Of the 28 subjects, 24 were assessed at one month, 25 at three months, and 22 at nine months. On the self-report measures, the attrition rate was

much higher. Some subjects were unwilling and some unable to complete the written tests. In some cases, the subject was given the tests to fill out at home and return by mail. The compliance rate on this approach seemed particularly low. On the SCL-90, 23 subjects completed filling out the forms at one and three months, but at the nine-month testing, the day was so filled with various tests that many patients were given the SCL-90 to return by mail. The result is that data for only 17 subjects was collected. The attrition rate at nine months on the TSC, the only point during the Community Phase it was administered, was even higher. Only 11 subjects completed the TSC, which rendered that data not amenable to meaningful analysis.

Relapse and hospitalization information was given a high priority. The research center employed a social worker full-time to provide aftercare and monitor the SST and HT patients in the community. She maintained a regular schedule of weekly contacts with the patients. She also met with the patients weekly during their 10-week stay in the program and was able to develop rapport with most of them. It is highly unlikely that any relapses or hospitalizations went undetected in the HT and SST groups. It will be recalled that a non-equivalent control group was introduced to provide an additional comparison for the relapse and/or hospitalization rates of the HT and SST groups. Since the MT patients were part of a different study, follow-up proved more difficult. The secretary at the research center attempted to maintain monthly contacts with the patients' families. Moreover, since neither the patients nor their families knew the secretary nor received any aftercare services from her, the level of cooperation

was less. If the parent(s) did report that an MT patient had been hospitalized or was having trouble with symptoms, an interviewer was sent to conduct an assessment for relapse. However, the time interval of a month between telephone contacts was sufficient for a patient to relapse and remit. The MT patients who had not been rated as relapsed by the ninth month were also evaluated, and these follow-ups uncovered periods of symptomatic exacerbation and even hospitalizations which had gone undetected by the telephone contacts. Therefore, it seems likely that some MT relapses and hospitalizations went undetected due to the less intense follow-up procedures.

Overall Symptomatology. Hypothesis 6 predicted that there would not be any significant differences between the HT and SST groups on the summary indices of symptoms. To test this hypothesis, $2(\text{HT, SST Groups}) \times 2(\text{pretreatment, follow-up period})$ analyses of covariance were conducted on the PAS total, the SCL-90 PST, and the SCL-90 PSDI scores, with the pretreatment scores serving as covariates and the one-month, three-month, and nine-month follow-up periods as the respective dependent variables. The results of these analyses, presented in Tables 12 and 13, were consistent with this hypothesis. Unlike the results at posttreatment, there was no consistent pattern to the differences favoring either the HT or the SST program. The direction of differences fluctuated: at one month, the SST adjusted mean on the PAS Total was slightly lower; at three months, the HT adjusted mean was lower; at nine months, the SST adjusted mean was lower again (Table 12). While attrition of subjects was minimal at one and three months, the loss of five SST patients at nine months adds to the

Table 12

PAS Scores: Community Phase

<u>TOTAL</u>	Posttreatment	1 mo.	<u>F</u>	3 mo.	<u>F</u>	9 mo.	<u>F</u>
SST	8.29 (14)	6.13 (12)	.37 ns	7.50 (12)	.67 ns	6.66 (9)	.01 ns
HT	7.00 (14)	7.29 (12)		6.03 (13)		6.84 (13)	
<u>ANXIETY</u>							
SST	1.48 (14)	.58 (12)	.34 ns	1.00 (12)	.39 ns	1.15 (9)	3.74 p < .10
HT	1.30 (14)	.84 (12)		.77 (13)		.35 (13)	
<u>DEPRESSION</u>							
SST	.85 (14)	.97 (12)	1.87 ns	1.13 (12)	1.27 ns	.35 (9)	.03 ns
HT	.51 (14)	.45 (12)		.65 (13)		.42 (13)	

Table 13

SCL-90 Scores: Community Phase

	Posttreatment	1 mo.	F	3 mo.	F	9 mo.	F
<u>PST</u>							
SST	37.74 (14)	29.86 (12)	.07 ns	35.30 (12)	.26 ns	30.89 (8)	.02 ns
HT	36.39 (12)	32.52 (11)		39.94 (11)		32.65 (9)	
<u>PBDI</u>							
SST	1.72 (14)	1.61 (12)	.46	1.44 (12)	.17	1.21 (8)	.12 ns
HT	1.50 (12)	1.41 (11)		1.33 (11)		1.34 (9)	
<u>ANXIETY</u>							
SST	.63 (14)	1.13 (12)	.31 ns	1.36 (12)	.01 ns	.52 (8)	.09 ns
HT	.63 (12)	1.05 (11)		1.08 (11)		.63 (9)	
<u>DEPRESSION</u>							
SST	1.13 (14)	.91 (12)	.05 ns	.97 (12)	.03 ns	.62 (8)	.01 ns
HT	.85 (12)	.82 (11)		.91 (11)		.67 (9)	

inconclusiveness of the findings.

The patients' self-reports of symptoms also showed no significant differences and an alternating pattern in terms of direction of differences. The SST group reported fewer symptoms at the one, three, and nine-month follow-ups (PST, Table 13). All these differences were quite small and nonsignificant.

The analysis of the pattern of small, nonsignificant differences at posttest using the binomial test was based on the entire sample of 14 in each group. The nonrandomness of attrition during the follow-ups would render such an analysis for the one, three, and nine-month data of dubious validity. The results from the PAS and SCL-90 summary indices indicate that the overall level of symptoms did not differ between the HT and SST groups during the community phase.

Anxiety. Hypothesis 7 predicted that the HT group would show a lower level of anxiety during the community phase. The results of analyses of covariance on the anxiety subscales of the PAS and the SCL-90 are presented in Tables 12 and 13. At one month, both groups showed a decrease on the PAS anxiety subscale compared to their discharge score, and the SST group's decline of .9 was particularly large (Table 12). However, the difference between the groups was not significant. At three months, the SST adjusted mean rose and exceeded the HT mean, although not significantly. The HT adjusted mean continued to drop at each assessment over the nine-month follow-up period. At nine months, the HT mean of .35 was particularly low, and the difference between the HT and SST groups approached significance at the .10 level.

However, the self-report measures at one and nine months were in the opposite direction of the PAS interview results. First, the SCL-90 anxiety score at one month rose in both groups relative to the discharge score (Table 13). At one month, the HT adjusted mean was lower while at nine months the SST mean was lower. None of these differences were significant either, and there was a huge proportion of missing subjects on the SCL-90 data in both groups. While there was no evidence to support Hypothesis 7, perhaps the most important finding is that the level of anxiety remained low in both groups during the follow-up period.

Depression. Hypothesis 8 predicted a greater decrease in depression among the HT patients (see Tables 12 and 13 for results of analyses of depression subscales). On the PAS Depression subscale, the differences at one, three, and nine months were all nonsignificant. The HT adjusted mean was slightly lower at one and three months, while the SST mean was lower at nine months (Table 12). The SCL-90 data showed the same pattern. The HT mean was slightly lower at one and three months, while the SST mean was lower at nine months (Table 13). While Hypothesis 8 was not confirmed, depression in both groups remained low during the community phase, usually below the "mild" (1.0), and "a little bit" (1.0) levels on the PAS and SCL-90 respectively.

Self-concept. Hypothesis 9 predicted that the HT patients would do better on the measure of self-concept at follow-up. The results of the analysis of covariance on the nine-month TSC scores is presented in Table 14.

Table 14

Tennessee Self-Concept and SAD Scores: Community Phase

	Posttreatment	9 mo.	Adjusted Mean	<u>F</u>	<u>p</u>
<u>TSC TOTAL</u>					
SST	332.86 (14)	324.00 (6)	318.94	.63	ns
HT	317.08 (13)	334.17 (5)	342.37		
<u>TSC SOCIAL SELF</u>					
SST	65.86 (14)	65.60 (6)	65.43	.55	ns
HT	63.69 (13)	67.50 (5)	68.18		
<u>SCL-90 INTERPERSONAL SENSITIVITY</u>					
SST	1.01 (14)	.58 (6)	.62	.10	ns
HT	.53 (12)	.60 (9)	.55		
<u>SAD</u>					
SST	9.92 (13)	10.86 (7)	10.74	1.50	ns
HT	10.15 (13)	14.40 (10)	13.91		

At nine months, the data base for the TSC diminished to less than half the patients. The pattern of the nine-month results is similar to the posttreatment findings. The HT group started at a lower level but improved, whereas the SST group showed a slight decline (Table 14). However, the difference was nonsignificant, and the attrition rate was so high--17 of 28 patients, that no reliable conclusion can be drawn from the data. Therefore, Hypothesis 9 which predicted larger improvement in self-concept for HT patients was not confirmed by the community findings.

Social Skills. Hypothesis 10 predicted a better outcome on the social skills measures for the SST patients at the nine-month follow-up period (see Table 14 for results of analysis of covariance on these data).

At nine months, there were no significant differences between the two groups on any of the three self-report measures of social skills. The attrition rate was high on all three measures, making interpretation of the data difficult. The SCL-90 Interpersonal Sensitivity subscale results, which approached significance at posttreatment, were very close at nine months: .62 for the SST group and .55 for the HT group. The TSC Social Self subscale means were also similar: 65.43 and 68.18 for the HT group. The SAD showed the largest difference and favored the SST program, but the loss of half the SST patients on this measure leads to questions regarding the representativeness of the data. However, the nonsignificance of all these results leads to the conclusion that Hypothesis 10 which predicted better results for the SST group was not supported by the data.

Community Survival. Data was collected on both symptomatic relapse and hospitalization in the SST, HT, and MT groups. First, the results concerning patients who relapsed and/or were hospitalized will be examined. Patients who experienced either of these conditions clearly had a difficult time surviving in the community. Then the relapse and hospitalization data will be examined separately. In the following analyses, the SST and HT groups will be compared with each other first. Then the MT data will be examined. There are two reasons for following this procedure. First, the most essential comparison is between the randomly assigned HT and SST groups. The MT treatment is a post hoc quasi-experimental control group developed to give an additional perspective on the HT versus SST comparison. Second, the Fischer Exact test permits the comparison of 2×2 data even with small samples. The chi square test requires a minimum of five expected per cell and, unfortunately, most of the tables comparing the HT, SST, and MT groups do not meet this minimum requirement.

Hypothesis 11 predicted no differences in number of relapse/hospitalizations between the HT and SST groups. Table 15a shows that the SST program did slightly better, eight "survivors" versus six in the HT group. However, the difference was not significant at the .10 level. Thus, Hypothesis 11 was supported by the data.

Table 15a also shows the results from the MT group. Hypothesis 12 predicted that the SST and HT groups would have fewer relapse and/or hospitalizations than the MT group. As in the HT group, the majority of MT patients relapsed or were hospitalized within nine months of discharge. However, the differences among the three treatments

Table 15a

Relapse and/or Hospitalization by Treatment Condition

	HT	SST	MT
Relapse/Hosp.	8	6	14
No Relapse/Hosp.	6	8	9

$$HT \times SST: \chi^2 = .14, \underline{df} = 1, ns$$

$$HT \times SST \times MT: \chi^2 = 1.18, \underline{df} = 2, ns$$

Table 15b

Relapse by Treatment Condition

	HT	SST	MT
Relapse	8	4	9
No Relapse	4	8	9

$$HT \times SST: \chi^2 = 1.67, \underline{df} = 1, ns$$

$$HT \times SST \times MT: \chi^2 = 2.67, \underline{df} = 2, ns$$

Table 15c

Hospitalization by Treatment Condition

	HT	SST	MT
Hosp.	7	4	9
No Hosp.	7	10	14

$$HT \times SST: \chi^2 = .60, ns$$

$$HT \times SST \times MT: \chi^2 = 1.35, ns$$

were not significant ($p < .10$), leading to the conclusion that relapse and/or hospitalization was not affected by either the HT or SST programs.

The data on relapse during the nine-month period following treatment are shown in Table 15b. Two patients in both the HT and SST programs were discharged with such a high level of persisting symptoms that it was impossible for them to relapse under the PAS criteria (see section on relapse in Dependent Measures). Since they were not included in the following analysis, there were only 12 patients in the SST and HT groups. While twice as many HT patients relapsed (eight versus four), the difference in relapse rate did not achieve statistical significance ($p > .10$). As in the case of the relapse and/or hospitalization data, Hypothesis 11 predicting no differences between the HT and SST groups, was supported by the results.

The difference in relapse rates among the SST, HT, and MT groups also was not significant (Table 15b, $p > .10$). However, Hypothesis 12 predicted a significant difference. Thus, the data do not support the hypothesis that there was a differential treatment effect operating among the HT, SST, and MT groups.

The results of the hospitalization data for the HT and SST patients were similar to the relapse and/or hospitalization and relapse findings. Although more of the HT patients were hospitalized (seven versus four), the difference was not significant ($p > .10$, Table 15c). This is the outcome predicted by Hypothesis 11. The hospitalization data did not show the significant difference among the three treatments predicted by Hypothesis 12 ($p > .10$, Table 15c).

Thus, all three outcome measures of community survival supported Hypothesis 11 which predicted that there would not be a significant differential treatment effect between the HT and SST groups. However, all three outcome measures failed to support Hypothesis 12, indicating that the two experimental treatments (HT and SST) were not significantly more effective than the minimal treatment control group as Hypothesis 12 had predicted.

Medication Compliance. Since medication compliance has been found to strongly influence relapse and hospitalization (Hogarty, 1974), medication-compliance effects need to be assessed in any evaluation of patient outcome in the community. Patients were divided into medication-compliers and medication-refusers using the criteria described in the Dependent Measures section. Because of the small sample size in the HT and SST groups, the Fischer Exact test was used to examine the relationship between medication compliance and outcome for all three indices of community survival. Both the HT and SST relapse and/or hospitalization by medication compliance comparisons were significant (Table 16a, HT: $p = .06$; SST: $p = .06$). Table 16b, which combines the HT and SST data also shows a significant relationship between relapse and/or hospitalization and medication compliance ($\chi^2 = 7.00$, $df = 1$, $p < .01$).

However, when the MT data were subjected to a chi square test, the relationship of medication compliance to relapse and/or hospitalization did not attain significance (Table 16a, $p > .10$). In examining Table 16c, it can be seen that the results for medication-refusers in the MT program were consistent with the HT/SST findings. In all

Table 16a

Relapse and/or Hospitalization by Treatment Condition
by Medication Compliance

	HT		SST		MT	
	Com.	Ref.	Com.	Ref.	Com.	Ref.
Relapse/Hosp.	1	7	2	4	2	12
No Relapse/Hosp.	4	2	7	1	2	7

HT: Fischer Exact $p = .06$

SST: Fischer Exact $p = .06$

MT: $\chi^2 = .01$, $df = 1$, ns

Table 16b

Relapse and/or Hospitalization by Medication Compliance:
HT and SST Combined

	Compliers	Refusers
Relapse/Hosp.	3	11
No Relapse/Hosp.	11	3

$\chi^2 = 7.00$, $df = 1$, $p < .01$

Table 16c

Relapse and/or Hospitalization by Medication Compliance:
All Treatments Combined

	Compliers	Refusers
Relapse/Hosp.	5	23
No Relapse/Hosp.	13	10

$\chi^2 = 8.27$, $df = 1$, $p = .005$

three groups, most of the medication-refusers relapsed or were hospitalized. However, the protective value of medication was not as apparent among the MT patients. Half the compliers still relapsed, although the small sample of four makes the interpretation of this finding very tentative. However, the combined MT, SST and HT data showed a significant relationship between medication compliance and relapse and/or hospitalization among all the patients in the study (Table 16c $\chi^2 = 8.27$, $df = 1$, $p < .005$), which is probably due to the strength of the HT/SST results.

The pattern of results in the relapse data was the same as in the relapse and/or hospitalization data. Within the HT and SST groups, medication compliance was significantly related to relapse (Table 17a, HT: $p = .07$; SST: $p = .01$), but the findings were not significant for the MT group ($p > .10$). Table 17c, which combines the data for all three treatments still showed a significant relationship between relapse and medication compliance ($\chi^2 = 7.13$, $df = 1$, $p < .01$).

In the hospitalization data, neither the SST nor HT groups showed a significant effect for medication compliance (Table 18a, $p > .10$). However, in both groups the compliers fared better than the refusers. When the data from both groups were combined, the effects of medication compliance still did not attain significance (Table 18b, $p > .10$). Neither the MT results alone or combined with the other two treatments were significant either (Tables 18a, 18c, $p > .10$). Thus, medication compliance did not seem to be as powerful an influence on hospitalization as it was on the other two measures of community survival.

The finding that medication compliance significantly affected

Table 17a

Relapse by Treatment Condition by Medication Compliance

	HT		SST		MT	
	Com.	Ref.	Com.	Ref.	Com.	Ref.
Relapse	1	7	0	4	1	8
No Relapse	3	1	7	1	1	8

HT: Fischer Exact $p = .07$ SST: Fischer Exact $p = .01$ MT: Fischer Exact $p > .10$, ns

Table 17b

Relapse by Medication Compliance: HT and SST Combined

	Compliers	Refusers
Relapse	1	11
No Relapse	10	2

Fischer Exact $p = .0004$

Table 17c

Relapse by Medication Compliance: All Treatments Combined

	Compliers	Refusers
Relapse	2	19
No Relapse	11	10

 $\chi^2 = 7.13, p < .01$

Table 18a

Hospitalization by Treatment Condition by Medication Compliance

	HT		SST		MT	
	Com.	Ref.	Com.	Ref.	Com.	Ref.
Hosp.	1	6	2	2	1	8
No Hosp.	4	3	7	3	3	11

HT: Fischer Exact $p > .10$, ns

SST: Fischer Exact $p > .10$, ns

MT: Fischer Exact $p > .10$, ns

Table 18b

Hospitalization by Medication Compliance: HT and SST Combined

	Compliers	Refusers
Hosp.	3	7
No Hosp.	11	6

$$\chi^2 = 2.40, \underline{df} = 1, ns$$

Table 18c

Hospitalization by Medication Compliance: All Treatments Combined

	Compliers	Refusers
Hosp.	4	16
No Hosp.	14	17

$$\chi^2 = 2.36, \underline{df} = 2, ns$$

relapse and/or hospitalization and relapse measures raised a number of questions which were not part of the original 12 hypotheses. First of all, was there a significant difference in medication compliance among the three treatments? Second, if there was a significant difference in medication compliance, are there any intervening variables which might account for this difference? Further analyses were therefore conducted to address these questions.

A chi square analysis of the number of medication-compliers and medication-refusers in the HT and SST groups was not significant (Table 19a, $p > .10$). However, the HT x SST x MT comparison was significant at the .05 level (Table 19a, $\chi^2 = 8.38$, $df = 2$, $p < .05$). Thus, there seemed to be differences in the rate of medication compliance among the three treatments. The SST groups had a highest rate of medication compliance: 64%. A minority of patients in both the HT (36%) and MT (17%) programs were compliers.

Despite the lack of significance in the community survival data, the differences between the HT and SST groups were quite visible. For example, eight of the HT patients relapsed whereas only four of the SST patients relapsed. However, when medication-compliers and medication-refusers are separated within each treatment, it can be seen that most of the compliers in both groups avoided relapsing, while most of the refusers in both groups did relapse (Tables 19b and 19c). Combining the data from both treatments, it can be seen that 10 of the 11 compliers avoided relapse while 11 of the 13 refusers relapsed. Thus, some of the observed differences in community survival could be due to the differential rate of medication compliance.

Table 19a

Medication Compliance by Treatment Condition

	HT	SST	MT
Medication-Compliers	5	9	4
Medication-Refusers	9	5	19

HT x SST: $\chi^2 = 1.29$, $df = 1$, ns

HT x SST x MT: $\chi^2 = 8.38$, $df = 2$, $p < .05$

Table 19b

Relapse by Treatment Condition: Medication Refusers

	HT	SST	MT
Relapse	7	4	8
No Relapse	1	1	8

HT x SST: Fischer Exact $p > .10$, ns

Table 19c

Relapse by Treatment Condition: Medication Compliers

	HT	SST	MT
Relapse	1	0	1
No Relapse	3	7	1

HT x SST: Fischer Exact $p > .10$, ns

This analysis takes some liberty with the data since neither the analysis of treatment effects nor differences in rate of medication compliance attained significance in the SST and HT groups. However, the power of most statistical tests is highly related to the size of the sample. In situations with a small n , visual inspection of the data can be a valuable adjunct to statistical analysis by suggesting possibilities which are not necessarily validated by statistical testing.

The finding that nine of the SST patients were medication-compliers while only five HT patients were compliers warrants further attention. One possibility, examined in Table 20a, is that more of the SST group returned to their families where their medication could be supervised instead of living on their own in the community. However, eight of the HT patients and seven of the SST patients returned to their families, ruling out return to family per se as a significant factor. But when relapse is examined along with the living situation, an interesting pattern emerges. In the SST group, patients who lived on their own were no more likely to relapse than patients living with their families (Table 20b). However, in the HT groups returning to the family seemed to offer some protection against relapse, whereas all of the five patients who returned to the community relapsed.

Since medication compliance was such an important influence on relapse and hospitalization, this variable was explored along with living situation. The overall difference in medication compliance has already been mentioned--nine of the SST patients remained on medication while only five of the HT patients did. Table 21 shows that most of the SST patients were regular medication users regardless of whether they

Table 20a

Posttreatment Living Situation by Treatment

	HT	SST
Family	8	7
Community	6	7

$$\chi^2 = 0, \text{ ns}$$

Table 20b

Relapse by Living Situation by Treatment Condition

	HT			SST	
	Family	Community		Family	Community
Relapse	3	5		2	2
No Relapse	4	0		4	4

HT: Fischer Exact $p > .10$, nsSST: Fischer Exact $p > .10$, ns

Table 21

Medication Compliance by Living Situation by Treatment Condition

	HT		SST	
	Family	Community	Family	Community
Compliers	4	1	5	4
Refusers	4	5	2	3

HT: Fischer Exact $p > .10$, ns

SST: Fischer Exact $p > .10$, ns

returned to their families or to the community, although patients in their families were particularly likely to be compliers. However, patients in the HT group were much more likely to stay on medication if they returned to their family--four of the five HT compliers lived with their family. Only one of the six patients who lived in the community used medication regularly. The HT patients who returned to the community showed a medication-compliance record that was considerably poorer than that of the SST patients. The higher rate of relapse and hospitalization among HT patients could have been affected by the low rate of medication compliance of the HT patients who returned to live in the community. Since none of the findings concerning living situation achieved significance at the .10 level using the Fischer Exact test, the above findings and interpretations must be treated cautiously.

In summary, Hypothesis 11, which predicted no differences between the HT and SST groups, was confirmed by the lack of significant findings on relapse/hospitalization, relapse, and hospitalization. There was no evidence of any difference in the effectiveness of the experimental (HT, SST) versus control (MT) treatments. These results do not support Hypothesis 12 which predicted better outcomes for the HT and SST patients. Significant findings were found between medication compliance and relapse and/or hospitalization and also relapse, but not with hospitalization. The rate of medication compliance was also found to vary significantly in the three treatments, with the SST patients notably higher than the HT and MT patients. Medication compliance seemed particularly low among HT patients who returned to

live in the community.

Program Evaluation

The HT program was designed to achieve objectives in the areas of physical fitness, anxiety, self-concept, relaxation training, stress-management education and utilization of stress-reduction techniques in the community. In this section, outcomes in each of these areas will be evaluated among the HT patients without reference to the SST patients. The focus in this section is whether the various HT training procedures were effective in achieving their individual objectives. Whether such treatment objectives are helpful in reducing symptoms and enabling patients to adjust better in the community is a separate question. The relative clinical effectiveness of the HT treatment was the subject of the sections on Results: Treatment Phase, and Results: Community Phase.

The "one-group pretest-post design" used in the analysis of this data has limitations, particularly with regard to internal validity (Campbell and Stanley, 1963). The effects of time and medication are confounded in this design. Nevertheless, the lack of previous research on the use of holistic techniques with schizophrenic patients makes the question of the effective administration of the training procedures a particularly important concern.

Objective 1: Physical Fitness. Daily physical exercise was a major component of the HT program. Three days a week, the HT patients traversed a 1.8 mile route around the grounds of the hospital. On the other two weekdays, the patients exercised in the gym. During the

first week of treatment, all the HT patients were given the Cooper (1977) 12-minute aerobics fitness test. This simple test has been shown to correlate .90 with maximum oxygen consumption, considered the most valid measure of aerobic fitness (Cooper, 1977). At pretest, the 11 patients for whom there are data averaged 1.04 miles. This placed them in the "very poor" category of physical fitness. At post-test, they averaged 1.21 miles, an improvement of 16.7%. This change was significant at the .05 level. The average score of 1.21 miles just missed (by .01 miles) reaching the next highest category for fitness which Cooper labels "poor." While only two of the 11 scored above the "very poor" level at pretest, seven scored above this category at post-test. Eight of the 11 HT patients improved their performance. The finding of low levels of fitness among the HT patients is consistent with previous research showing that psychiatric patients have lower levels of fitness than the general population (Morgan, 1969). The significant improvement in performance on the 12-minute aerobic fitness test demonstrates that the schizophrenic patients in the present study did improve in physical condition over the course of the structured exercise program.

Objective 2: Anxiety. Much of the training during the HT program concerned stress-reduction. The daily relaxation training and exercise was expected to reduce anxiety. The SCL-90 has two scales which measure anxiety-related symptoms. HT patients' self-reports of Somatization symptoms declined from a mean of .96 to .51 during the program (Table 7). The t test for correlated means showed this change to be significant at the .05 level. Somatization remained at the low discharge

level throughout the community phase as well.

On the Anxiety subscale, the average score declined from 1.08 to .60 (Table 7) during treatment, significant at the .001 level. Although it rose slightly at one and three months, at nine months it was back to the level at discharge.

The Anxiety subscale of the PAS was rated by the research unit psychiatrist. The HT group declined from 2.00 to 1.36 (Table 8). While this change was not significant at the .05 level, it was below the .10 level. Anxiety continued to decline during the community phase and reached the very low score of .35 at the nine-month follow-up. Thus, the two self-report measures and the interviewer-rated scores all reflect reduction in anxiety during treatment, and maintenance of a low level of anxiety in the community.

Objective 3: Self-Concept. The HT patients came into treatment with a very low self-concept--the 6th percentile on the TSC (Table 11).

Weekly sessions focused on building self-esteem. At discharge, nine of the 13 patients had increased their self-concept, and the group mean increased to the 19th percentile. However, this result did not achieve significance at the .10 level. During the community phase, self-concept rose slightly, but the increase was not significant and only a minority of patients were assessed at nine months.

Objective 4: Relaxation Training. The HT patients spent 30 minutes each weekday practicing deep breathing, chanting, and meditation. However, the patients showed no change in their ability to lower their blood pressure over the course of the program. The mean change in systolic

blood pressure at pretest was .4 mm Hg, reflecting a slight rise over the 20 minutes of relaxation. At posttest, the 10 patients for whom there are data decreased their systolic readings .3 mm Hg. Given that the systolic averaged 111.40, this was a nonsignificant change clinically as well as statistically ($t = .63$, ns). The diastolic mean change did not vary from pre- to posttest. In both groups there was a very slight rise of .16 over the average level of 59.40. However, a recent summary of the relaxation literature has indicated that blood pressure is not a very sensitive indicator of relaxation skills in normotensive subjects. These findings are presented in the Discussion Section. Nevertheless, the training of HT patients in relaxation techniques was not demonstrably successful based on the available data.

Objective 5: Stress-Management Education. Starting with the second HT cohort, the patients listened to tapes twice a week which presented material on the nature of stress, its relation to diseases including schizophrenia, and ways to control stress. In order to check whether the material was being comprehended, six-item true/false quizzes were developed for many of the tapes, starting with the third program. The quizzes were administered immediately following the tape presentation and surveyed the basic concepts covered on the tape. The mean score on the quizzes was 5.36, and there were no scores below 4. Based on these results, it seems the HT patients comprehended the basic concepts of the stress-management curriculum.

Objective 6: Stress-Reduction in the Community. The aftercare social worker at the research center maintained regular contact with the HT

patients throughout the community phase. During her contacts, she inquired about the patients' utilization of the stress-reduction techniques. Her records show that none of the HT patients practiced any of the stress-reduction techniques on a regular basis. One patient in the first program and one patient in the second program continued exercising, but only for the first month after discharge. Three patients reported using meditation occasionally. None reported using yoga.

The failure of the HT patients to maintain the practice of these techniques while in the community is the most important shortcoming of the HT program. Reasons for this failure and suggestions for maintenance of stress-reduction activities are explored in the Discussion Section.

CHAPTER V

DISCUSSION

Treatment Phase

Overall Symptomatology. Both the HT and SST treatments resulted in substantial decreases in symptomatology over the 10-week course of the program. The number of self-reported symptoms on the SCL-90 declined from a mean of over 50 in both groups to under 40 (Table 7). Severity of distress associated with these symptoms also declined (PSDI). The interview (PAS) and nursing staff ratings of symptomatology reduced as well (Tables 8 and 9). There were no significant differences at the .05 level in the posttreatment adjusted means on any of the scales or subscales, as Hypothesis 1 predicted. However, the pattern of differences distinctly favored the HT program. Of the 19 subscales assessing different symptoms, the HT patients scored lower on 16 and tied on one other. Although the finding from the sign test must be interpreted with caution because of the lack of independence among the subscales, the difference was significant at the .001 level.

The HT treatment was not specifically designed to reduce symptoms with the exception of anxiety. The traditional medical model explicitly treats symptoms. The physician attempts to locate the exact site of the patient's physiological dysfunction and uses medication or surgery to restore normal functioning. Currently, most of the funding

in schizophrenic research goes toward projects attempting to locate neuro-transmitter substances and sites in the brain which are affected in schizophrenia. Thirty years ago, the excitement in the medical community generated by the development of a surgical technique, lobotomy, for the treatment of schizophrenia, led to its originator being awarded the Nobel Prize for medicine. However, it was later discovered that, while symptoms were reduced, almost every other important area of functioning was also reduced. Current treatment methods in psychiatry rely heavily on chemotherapy.

In the holistic model, medication and surgery have important roles in the treatment of illness as well. But other factors which go beyond the patient's physiological functioning are also considered important. Issues of meaning and direction in the patient's life, his/her sense of inner happiness, health habits, and stress patterns are all considered relevant treatment concerns in the holistic model because they affect the person's general state of health. The assumption in the holistic approach is that the way to improve a malfunctioning part of the body is to improve the overall well-being of the person.

The HT program included symptom-oriented treatments such as medication and training in techniques to reduce ANS and brain arousal. But it also included components to improve everyday health habits, self-esteem, physical fitness, positive expectations, and to facilitate the search for personal meaning.

The SST program straddled both the traditional and holistic models. As in the holistic model, the SST program went beyond a physiological focus into the patient's lifestyle. But it concentrated

very heavily on just two areas: social and independent living skills. Thus, it maintained the narrow focus of the traditional model by not attempting to touch most areas of the patient's life. Yet, the SST program also had generally positive effects on a wide array of symptoms. Thus, the results from the SST program conform to the holistic assumption that the individual is an integrated system, and improvements in one area of functioning affect other areas as well.

Delusions and Hallucinations. Most of the differences between the HT and SST programs were related to their focus on separate clinical objectives. Although these treatments were pitted against each other in this study, they are basically complementary. A treatment program could include both sets of training procedures. But there was one area where the HT and SST programs were in conflict--the treatment of hallucinations and delusions. The behavioral approach views them as asocial behaviors which serve to attract attention, and therefore the basic treatment strategy is to ignore them entirely. The following excerpts are from a case study of a behavioral treatment of a patient with hallucinations and delusions:

When S and I were talking (apparently reinforcing for him) and he said "voices," I would look away, check my watch, begin to leave, and do other things associated with breaking contact. When he spoke about "thoughts" or anything involving personal responsibility, I would maintain eye contact, smile, nod my head, and say "mm-hmm." The rest of the staff were also informed of these contingencies and were encouraged to do the same, and most of them did.

Using the same verbal conditioning procedures outlined above, he was reinforced for speaking about his human qualities, frailties, needs and motives, and was ignored when talking about his delusional system (Nydegger, 1972, p. 226).

The behaviorally-oriented research unit which housed both the HT and SST programs had a unit-wide policy of putting "delusional talk" and discussion of voices on extinction. If a patient introduced the topic of his/her voices or delusional beliefs while conversing with a staff member, the staff member immediately terminated the conversation. Even discussion of religion with patients was prohibited because it was considered to contribute to the patients' delusional system. The SST program followed this policy as well. No discussion or expression of hallucinatory or delusional experiences was permitted during any of the sessions.

The HT program, however, took the opposite tack by encouraging patients to express and explore their psychotic experiences. Sessions were specifically scheduled and designed to facilitate verbal and non-verbal expression of hallucinations and delusions. The HT approach was based on the premise from the Jungian school that, "the abstract symbolic expression of bizarre-mythological images touch upon a critical issue in the life of the individual" (Perry, 1974, p. 163).

The conflict between the HT and SST treatment philosophies was illustrated in their differing approaches toward patients' religious delusions. Several patients in the HT program reported that they had seen angels, talked to God, or been the Messiah. These experiences remained important to many of them despite the lack of validation given to such experiences by their social environment. During the "Growth and Schizophrenia" sessions, patients explored these experiences in discussions and artwork. They also listened to tapes describing similar experiences of well-known religious mystics and social prophets,

and drew parallels with their own experiences.

Another illustration of the HT approach toward delusions was the treatment given a patient who had heard the voice of Frankenstein during his psychotic episode. He was encouraged to read the novel Frankenstein during the program. The Jungian-based sessions focused on what parts of himself the patient was not accepting or expressing, and therefore needed to split off from him and take an independent voice in order to be heard.

The research unit's psychiatrist, some of the nursing staff, and members of the HT/SST treatment team expressed the concern that the HT program might be contributing to the patients' delusional systems and hallucinations by giving them attention. However, the results showed that the HT patients' hallucinations and delusions reduced during the program. In fact, hallucinations and delusions on the PAS (Table 8) showed a larger reduction (although not significant) in the HT program than in the SST program. Thus, the behavioral assumption that hallucinations and delusions increase with attention was not supported by these findings. The Jungian assumption that the schizophrenic's hallucinations and delusions are meaningful work that the psyche is doing cannot be validated by data. Unfortunately, there is no measure for such intrapsychic growth. However, the data did show that a treatment which derived from the Jungian premise did not appear to exacerbate hallucinations and delusions while working with the contents of such psychotic experiences.

Anxiety, Depression, Social Skills, Self-Concept. Hypotheses 2 and 3

predicted that the HT treatment would produce greater reduction in anxiety and depression. While the differences were not significant, most were in the predicted direction. Both programs resulted in reductions on the PAS and SCL-90 Depression subscales, but the HT adjusted means were lower. The difference on the PAS Motor Retardation approached significance at the .15 level in favor of the HT group. On the anxiety subscale of the PAS the SST group's scores actually increased during treatment while the HT mean decreased. The increase in anxiety may be related to the performance demands placed on the SST patients. As part of their training, they roleplayed interactions with other patients or the therapists in front of a videorecorder. Then their performance was reviewed and critiqued. Some patients reported finding this procedure anxiety-arousing. This may also explain why the only subscale to achieve significance at the .10 level was the Interpersonal Sensitivity subscale on the SCL-90. This subscale assesses discomfort during social interactions. The SST program's focus on performance and evaluation for several hours a day may have heightened the patients' anxiety regarding social interactions. The argument could be made that the temporary increase in discomfort was offset by the long-term benefits of improved skills which would subsequently reduce discomfort in social interactions. Some treatments, medical and psychotherapeutic, have the effect of temporarily increasing symptoms and distress, e.g., surgery, grief counseling. However, the argument could also be made that the significant difference was the result of the HT program's stress reduction training generalizing to interpersonal interactions. While the data did not strongly support Hypotheses 2 and

3, the HT program did produce larger reductions in anxiety and depression. However, the differences did not achieve significance.

In the area of social competence, Hypothesis 5 predicted that the SST patients would perform better at posttest. However, the adjusted means of the HT patients on the SAD, TSC Social Self subscale, and SCL-90 Interpersonal Sensitivity subscale reflected greater reduction of distress in interpersonal interactions. The above discussion on the Interpersonal Sensitivity subscale applies to the SAD and TSC as well.

In the area of self-concept, Hypothesis 4 predicted that the HT patients would improve more on the TSC. The HT patients did increase their scores on the total measure of the TSC, while the SST patients showed no change. This difference, while in the predicted direction, was not large enough to attain significance. Goffman (1961), Scheff (1975), and others have discussed the loss of self-esteem engendered by psychiatric hospitalization. Trying to improve self-esteem among hospitalized patients may be like swimming upstream.

Community Phase

Overall Symptomatology, Anxiety, Depression, Social Skills, Self-Concept. During the community phase, none of the findings were significant. No pattern of differences emerged with regard to overall symptomatology (Hypothesis 6), and none of results concerning anxiety (Hypothesis 7), depression (Hypothesis 8), social skills (Hypothesis 9), or self-concept (Hypothesis 10) showed statistically or clinically significant differences. The attrition of subjects over the nine months

contributed to the inconclusiveness of the community data. However, another factor affecting the HT results was the total lack of maintenance of the stress-reduction and positive health practices by the HT patients. The implications of this finding are discussed in the following section evaluating the HT program. However, the available data did indicate that most of the reductions from pretreatment levels of anxiety, depression, and psychopathology, as well as the improvements in self-concept and social competence that were present at posttreatment were maintained during the course of the community phase by patients in both programs.

Community Survival. The lack of significant differences among the SST, HT, and MT treatments during the community phase is in line with the four other studies reviewed in Chapter Two which followed patients after the termination of treatment. In these studies, the beneficial effects of treatment on symptomatic status and hospitalization did not continue through the posttreatment period. These findings with regard to hospitalization were replicated in this study where hospitalization rates were not significantly different between the SST and HT treatments, or between the intensive experimental treatments and the minimal control treatment.

The finding with regard to symptomatic status was not as clear. Relapse was defined in terms of symptomatic exacerbation, and the relapse rates did not differ significantly between the groups. The one, three, and nine-month follow-up assessments showed that the average level of symptomatology in the HT and SST patients remained close to

their level at discharge. The PAS and SCL-90 scores at nine months were similar to the posttreatment results. Unfortunately, there were no follow-up data on the MT patients. Thus, it seemed that despite periods of exacerbation, the HT and SST patients were able to maintain their posttreatment level of symptomatology during the community phase. However, the attrition of some of the more highly symptomatic patients and the lack of a control group to compare these follow-up results to makes the conclusion tentative.

The most important factor affecting community survival in this study was medication compliance. Relapse hospitalization and relapse were both significantly related to medication compliance. This finding is in line with other research. Hogarty, Goldberg, Schooler, and Ulrich (1974) found that 67.5% of patients on placebo relapsed within one year, whereas 30.9% of drug-treated patients relapsed. About 75% of the relapsed patients were actually hospitalized.

Nine of the SST patients were medication-compliers while only five of the HT patients were. The difference in compliance, while possibly influencing the observed difference in relapses and hospitalizations, is an important finding itself. Particularly interesting is the virtual lack of medication compliance among HT patients who returned to the community. Even the one HT patient living in the community who was classified as a complier went off his medication for two weeks before his relapse and hospitalization (one month off medication was used as the criterion for drug-refusal).

Neither the SST nor the HT procedures included a significant component on medication. However, an examination of the family

therapy curriculum for the SST program shows that one and a half of the two-hour sessions were devoted to medication. The first dealt with the effects of neuroleptics, the relationship of medication to relapse, and side effects. The other session covered the individual patient's specific medication and dosage while in the program, and developed plans for medication compliance when the patient was discharged. The SST family therapy sessions were assembled and led by Robert Liberman, M.D., Ian Falloon, M.D., and Robert Aitchison, Ph.D. Drs. Liberman and Falloon are both considered expert psychopharmacologists and have several publications in the area of medication-effects.

The HT family therapy sessions suffered primarily from a lack of participation. Whereas 100% of the 14 SST patients' families attended the weekly therapy sessions, only half of the HT patients' families were involved. One HT patient did not have a family, but the major factor was probably the difference in location of the SST and HT family therapy sessions. The SST sessions were held in an office specifically rented for this purpose. It was located midway between the hospital and Los Angeles, resulting in a much shorter drive for the SST families. The HT family therapy was held at Camarillo Hospital, which was a one to two-hour drive each way for most of the families.

The unit physician, social worker, and rehabilitation therapist led most of the HT sessions. A psychologist was also involved with two of the patient groups' families. The format was not educational, but dynamic. The content focused on conflicts within the family and relationship issues. Medication effects and compliance topics were dealt with if they emerged during the sessions, but there was no

systematic coverage of medication benefits and side effects. Thus, even the seven patients who participated in therapy with their families received less information on medication. Table 22 indicates that the family therapy sessions were effective in forestalling relapse/hospitalization among the HT patients: six of the seven patients who received no family therapy relapsed or were hospitalized, while only two of the seven patients who participated with their families did. This difference was significant ($p < .05$). Thus, another factor that may have contributed to the higher incidence of relapse and hospitalization among the HT patients was the lack of participation in family therapy by half the patients in the program.

Although there were reductions in both treatments over the course of the program, these changes could have been due to the sustained use of medication or nonspecific effects such as increased attention, positive staff expectations, etc. Unfortunately, with the lack of a true control group, there is no way to test this possibility. In the final evaluation of both treatments, the lack of effectiveness beyond medication and nonspecific effects looms as a distinct possibility.

The data from the community phase could be used to argue that treatment programs should focus entirely on developing strategies for increasing medication compliance. While there still is much work to be done in this area, the current thrust in treatment for the disabled concerns quality of life issues, such as level of independent functioning. The research reviewed earlier showed that schizophrenics have deficiencies in many areas of functioning which are not affected by medication. Thus, despite the discouraging outcome during the community

Table 22

Family Participation in Therapy and Relapse/Hospitalization Among
HT Patients

	Family Therapy	No Family Therapy
Relapse/Hosp.	2	6
No Relapse/Hosp.	5	1

Fischer Exact $p = .049$

phase of this phase, there is still a need to develop more effective treatments which will improve other nonsymptom-related dimensions of community living.

Evaluation of the Holistic Program

Since this was the first holistic treatment program for schizophrenics, it should be considered a pilot program. While not all of the HT treatment objectives were met, the program did result in a reduction on every symptom dimension targeted for improvement as well as on the complete array of symptomatology assessed by the SCL-90, PAS, and CGI at posttest. However, these analyses were not based on comparisons with a control group and, therefore, have to be considered tentative. But the results should alleviate the concern of some treatment and nursing staff that delving into patients' psychotic experiences results in an increase in their delusions and hallucinations since both of these dimensions showed a greater reduction in the HT patients. Physical fitness seemed to improve. Anxiety was reduced at posttreatment on all three measures, and two of these findings were statistically significant when compared to the HT means at pretreatment. Self-concept improved from the 6th to the 19th percentile, although this difference was not significant. The quiz results demonstrate that schizophrenic patients, despite attentional and information processing deficits, can absorb an educational curriculum on the subject of stress management.

Two objectives of the HT program were not met. Relaxation training did not result in increased ability to lower blood pressure. However, a recent survey of the literature has shown that blood pressure

is not strongly affected by biofeedback and relaxation techniques in normotensive subjects (Frumkin, Nathan, Prout, and Cohen, 1978). Most studies employing finely calibrated instrumentation report changes of only 5-10 mm Hg systolic and diastolic after training, whereas "hypertensive subjects given more extensive training have been able to decrease BP by significantly larger amounts, as much as 16 mm Hg systolic and 21 mm diastolic" (p. 301). The pressure cuff/stethoscope measurement procedure employed in this study was probably not sufficiently reliable to detect differences on the order of 5-10 mm.

Clearly the most important unfulfilled objective of the HT program was the total lack of patient follow-through in the use of stress-reduction techniques while in the community. Holistic treatment methods have generally been used with people who are highly motivated to alter their health practices. For example, the UCLA CHEER program is a residential treatment program which focuses on changing health practices related to risk factors. It requires a 28-day commitment of time and over \$4,000 in tuition which is not covered by insurance. Most of the holistic movement is fueled by books and articles which appeal primarily to the higher socioeconomic strata of the population. In fact, no report of a prior holistic treatment program for schizophrenics was uncovered.

Most people find it difficult to stay on a regimen of good health practices such as regular exercise, good nutrition, and low stress. One of the characteristic experiences of schizophrenia is a loss of volition. In extreme form, this results in delusions of control where the patient is convinced that he/she is a robot or zombie under the control

of another force or person. But taking the dangerous liberty of generalizing about schizophrenics as a group, they are often apathetic and unmotivated. The argument has been made that this is a specific stance they have taken against the competitive and highly achievement oriented values of our culture. Also, one of the DSM III requirements for a diagnosis of schizophrenia is impaired functioning in such areas as work and social relations. The lack of maintenance of positive health practices and stress-reduction activities among the HT patients would not be surprising to mental health professionals who have experience working with this population. The lack of follow-through by schizophrenics has been noted with educational, vocational, and other objectives as well.

Yet, the HT patients, with only a few exceptions, cooperated with the program, and several became enthusiasts while participating in the program. The key difference between the treatment phase and the community phase seemed to be the structure provided by the program. The patients returned to an environment where the practice of yoga and meditation was not actively supported. Not only were there no scheduled daily sessions, but practicing yoga or meditation in a board-and-care, or probably even in most of the patients' families' homes, would have set them apart from the norms of their social environment. This finding concerning the need for continuing structured activities has been taken into account in the following section on suggestions for future treatment programs.

A finding which reflects positively on the HT program was its improvement over the 18 months of treatment with continuing development.

The HT program began with no prior research-validated procedures, no piloting, and only three weeks of preparation prior to the beginning of the study. The SST program started with a solid base of research and clinical techniques stretching back 15 years to provide direction. In addition, a treatment team consisting of a psychiatrist, two Ph.D. psychologists, and two M.A. psychologists piloted the SST procedures for six months with six patients before utilizing the techniques with the research subjects. Only two of the eight therapists were versed in the holistic philosophy or treatment methods. The problems of implementing a holistic program with personnel who were not holistically oriented became apparent during the first program. The therapists were willing to lead the HT sessions, and there were few problems with the exercise, yoga and meditation sessions which were highly structured and repetitive. However, the difficulty occurred in the afternoon educational sessions where different content areas had to be covered each day. Initially, the therapists were provided with reading materials and asked to lead discussions on such topics as nutrition, or the relationship between stress and disease. However, the therapists generally did not feel well-informed on these topics, and sometimes found themselves in the uncomfortable position of presenting aspects of the holistic philosophy that they did not understand well or did not concur with.

Starting with the second treatment cohort, audiotapes were developed which presented the information to be covered during the afternoon sessions. Quizzes, discussion guidelines, and art assignments were also created to accompany each session and thereby structure the

therapists' time and activities during the session. With these materials, the therapists were able and willing to facilitate the patients' understanding of holistic concepts. The first set of tapes were overly broad and complex in their coverage of the various topics. They were revised for the third program based on the feedback from the patients and therapists, and remained the same in the fourth and fifth programs.

Table 23 shows that the success of the HT patients in the community improved significantly with these refinements in the programs ($p = .03$). All five of the patients in the first two cohorts relapsed or were hospitalized. Two of the three patients in the third program did as well, but only one of the six patients in the last two cohorts relapsed or was hospitalized. This finding is not an artifact of time spent in the community since discharge. Although the earlier cohorts were in the community longer, and thus were more vulnerable to relapse and hospitalization for a longer period, the time period covered by these data was limited to the first nine months following discharge for all cohorts.

Suggestions for Future Holistic Treatment Programs

The lack of maintenance of the stress-reduction activities in the community suggests that any future holistic programs must pay special attention to the issue of generalization. One way to increase generalization would be to base the treatment program in the community instead of at a hospital, thereby facilitating continuity with the patient's natural environment. In order to maintain such health practices, patients need to integrate exercise, relaxation, nutritional awareness, and stress management into their lives. The shift from the treatment

Table 23

Relapse Rates Among HT Cohorts Grouped by
Time of Entry into Program

	Relapse	No Relapse
Cohorts 1, 2, 3	7	1
Cohorts 4, 5	1	5

Fischer Exact $p = .03$

environment in the hospital to the patient's ongoing living situation in the community was disruptive.

A longer period than 10 weeks of treatment is also probably necessary to make lasting changes in schizophrenic patients' lifestyles. A residential half-way setting would seem to be an ideal environment for a program. The move from the half-way house to an apartment or board-and-care could be introduced gradually, with patients initially returning in the evening and on weekends. A member of the treatment staff could visit the patient to ensure that plans are being followed through. Patients returning to apartments or board-and-cares could be linked to each other through a "buddy system" to provide companionship and support for maintaining the stress-reduction activities. In addition, the holistic treatment should be flexible enough to permit individual preferences for the different forms of exercise and relaxation techniques, particularly in the later part of the treatment period. The research needs of the SST/HT study required that all patients participate in identical activities. However, daily yoga or running for a person who dislikes such an activity is not likely to yield any long-lasting changes. The time could be much better spent exploring alternative forms of relaxation and exercise which the individual would prefer and, therefore, would be more likely to continue on his or her own. The selection of partners for the buddy system could be based partly on shared preferences for stress-reduction activities.

The demands of experimental design also required a clear separation of the treatment procedures. Thus, the SST group did not participate in any regular exercise and the HT patients did not receive

training in social skills or independent living skills. Yet, holistic treatment is not inherently limited to any particular set of techniques:

Holism is a philosophy for better living through awareness of all things which touch or affect us, combined with a private regimen for self-improvement which incorporates all the germane and usable information we have (Grant, 1978, p. 15).

Clearly the ability to be assertive and to do laundry affect the quality of a person's life. Therefore, training in social and independent living skills would be encompassed within the holistic treatment philosophy as well.

The SST approach toward training in these areas suffered from some of the same rigidities that the HT program had. While the literature reviewed in Chapter Two shows that schizophrenics as a group have a lower level of social skills than the nonschizophrenic population, some patients in the program did not seem to lack social skills. Also, patients had deficiencies in different areas of social skills and independent living skills, while the SST program was designed to cover the same areas for all patients. Learning rates also varied among the patients, and the training did not accommodate these differences either. This lack of flexibility probably watered down the impact of the SST treatment as well. Yet, from anecdotal evidence, several patients seemed to benefit from the focus on social and independent living skills. A few SST patients reported that it was easier for them to engage in conversations and to be assertive in situations where previously they would have exploded or withdrawn. Social and independent living skills training specifically tailored to the individual needs and deficiencies of the patient would also be part of an ideal community-based

residential treatment program.

The finding that participation in family therapy was related to relapse and medication compliance in the HT group merits inclusion in the treatment program as well. Medication seems to be an especially important area to focus on during family therapy sessions. Topics could include the benefits and side effects of medication, when and how to change dosage or type of medication, and any concerns the patient or family may have regarding medication. Establishing a balance between reduction in symptoms and side effects requires careful monitoring over a period of many weeks. Neuroleptic medication usually takes several weeks to achieve their maximum effect, and they remain in the brain tissues for at least one month (Domino, 1979). Because the effects of the medication are delayed, the usual strategy of increasing dosage until symptoms disappear often results in a higher dosage than is necessary. In general, the higher the level of medication, the higher the level of side effects, and medication compliance has been found to be related to the development of side effects (Van Putten, 1974). Therefore, the type of medication, schedule of medication taking, and dosage which provides the patient with the most overall benefits, balancing symptom reduction with side effects, should be an active and ongoing concern during the treatment program.

The opportunity for patients and their families to reestablish contact was another benefit of the family therapy sessions. The SST family therapy attempted to aid the family in their understanding of the nature of schizophrenia and to enhance their ability to cope with and be supportive of their relative. Because of the family's continuing importance

to most patients, families should be encouraged to participate in the sessions even when the aftercare plans do not include the patient returning to live with the family.

The finding in the SST/HT study and other studies that the effects of treatment disappear once treatment terminates suggests that a treatment model based on cure or even rehabilitation may not be appropriate. Patients should be encouraged to be as self-sufficient as possible, but many would probably require continuing care in order to maintain living in the community. Therefore, an ideal treatment program would not terminate contact with all patients. It would fade to some continuing care phase at whatever level is necessary to allow the patient to function as autonomously as he or she is capable.

While there were reductions in the level of symptomatology in both treatment groups, the lack of a true control group makes it impossible to rule out medication and nonspecific effects as competing explanations for the change. Thus, there is need for caution in the final evaluation of the effectiveness of the HT and SST treatments. For a "maiden voyage," the HT treatment did well in comparison with the much better established SST treatment approach, especially during the treatment phase. However, much work remains in developing ways to increase maintenance of the stress-reduction techniques once the patients are discharged from the program.

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December 11, 1980
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